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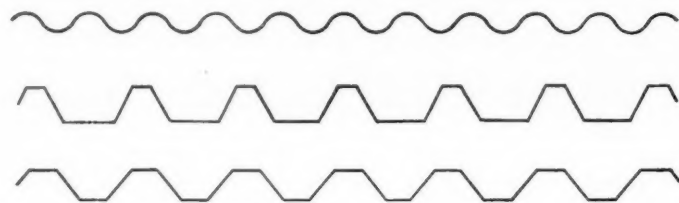
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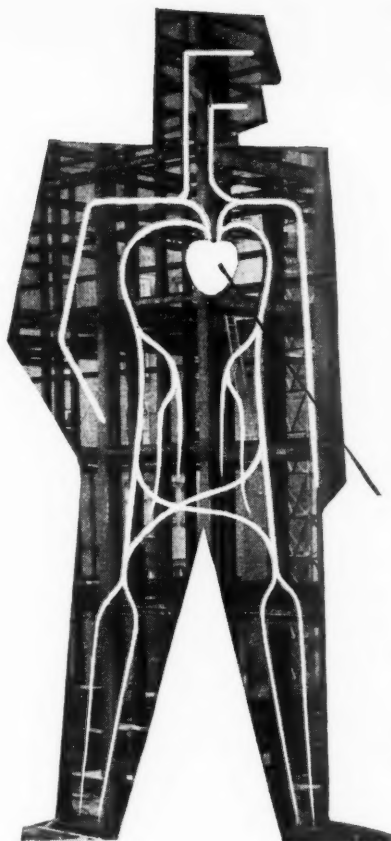
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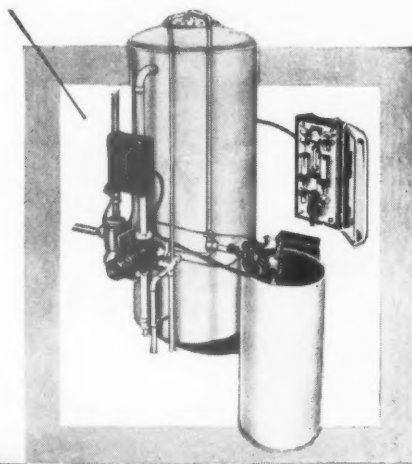
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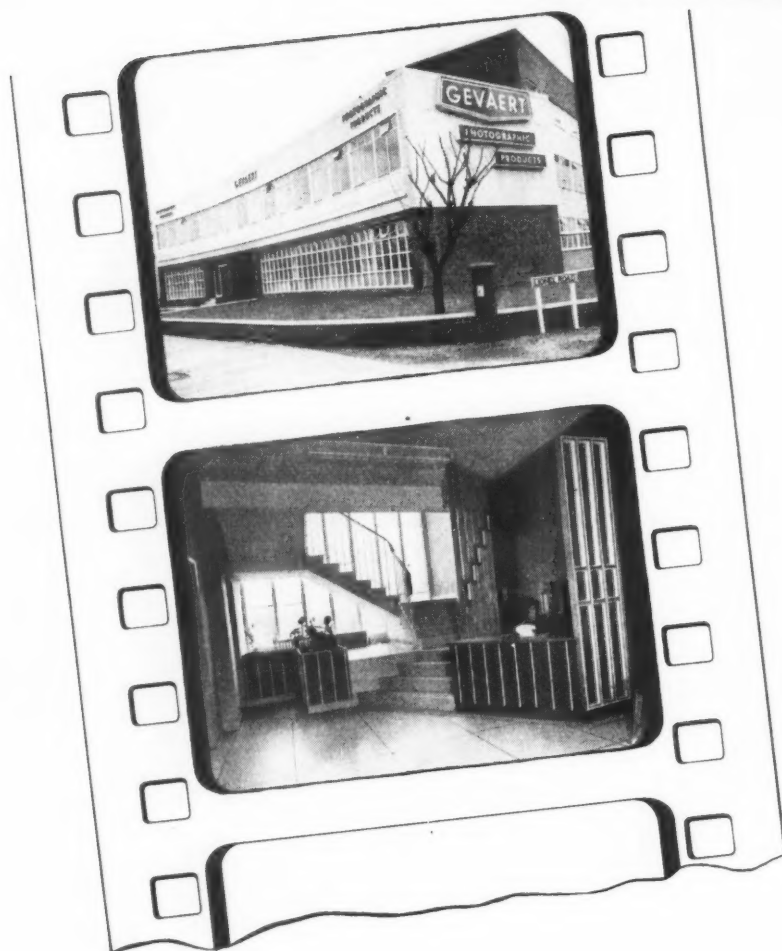
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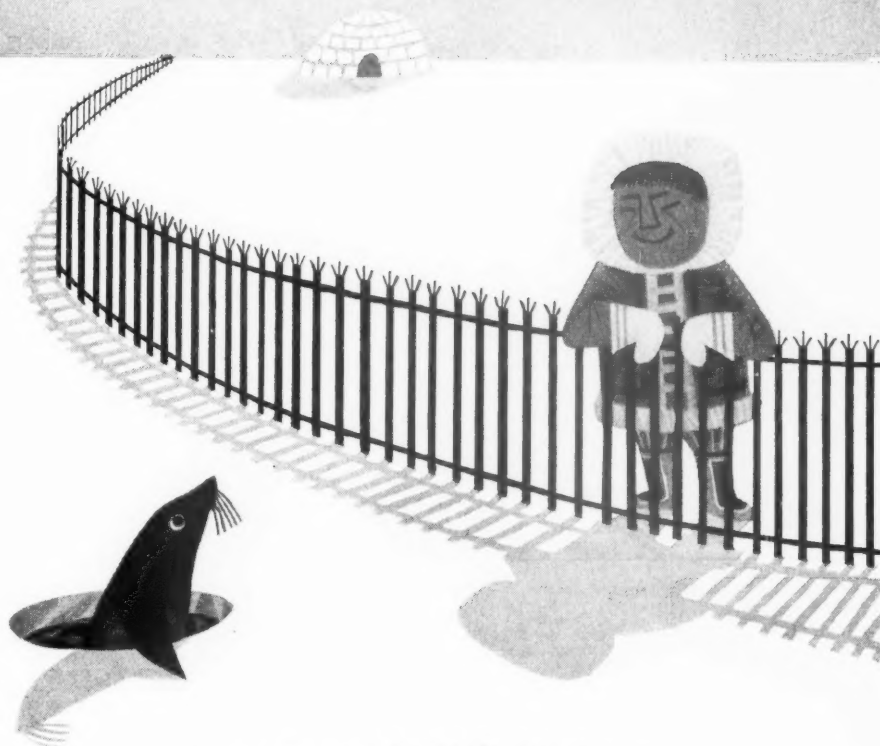
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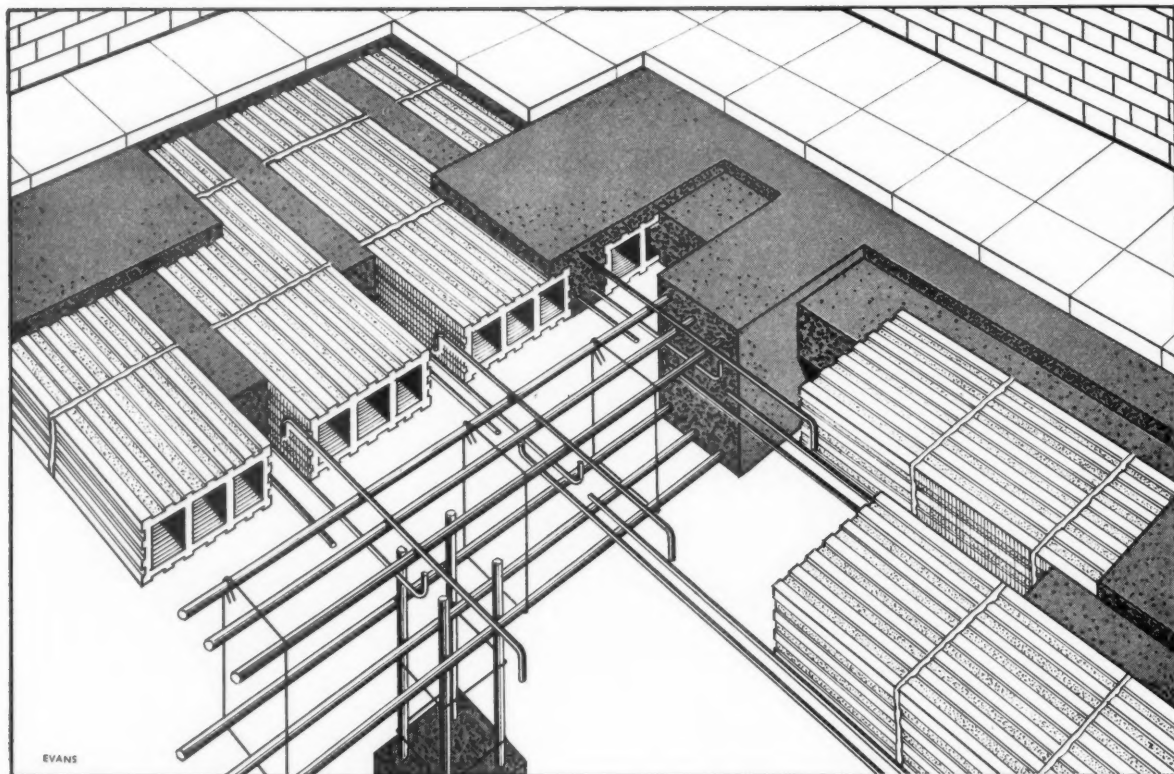
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'PHORPRES' HOLLOW CLAY FLOOR BLOCKS

and the IN SITU HOLLOW TILE FLOOR



We wish to thank the Kleine Company Ltd., for their co-operation in the compilation of this advertisement.

THE PRODUCT The depth of a Hollow Clay Block Floor, the thickness of the topping or screed of concrete above the blocks, the width of the beams or ribs between rows of blocks and the size, the number and location of the reinforcing steel placed in the ribs, are all governed by the span of the floor and the loading it has to carry. 'Phorpres' Hollow Clay Floor Blocks are specially made for *in situ* floor construction; they are all 12" long by 12" wide, but they are available in eight different thicknesses ranging from 3" to 10" in multiples of one inch, so that any normal span and loading can be accommodated. All the blocks are grooved to give a good dovetail key, both for the ceiling plaster and for the *in situ* concrete. Filler Tiles, which are also grooved, are available to provide a burnt clay soffit to the ribs, so that the floor can be given a completely all-clay soffit with its attendant advantages. These Filler Tiles (which can also be used as panel heating tiles) are made in three sizes: 12" x 3" x 1/2", 12" x 4" x 1/2", 12" x 5" x 1/2".

METHOD OF CONSTRUCTION

To build an *in situ* Hollow Tile Floor, 'Phorpres' Floor Blocks of a suitable depth are laid end to end in rows on temporary shuttering of steel or timber. The rows of blocks are so spaced that the gaps between rows correspond to the designed width of the reinforced ribs. If an all-clay soffit is required, Filler Tiles are laid at the bottom of the position, good quality concrete is carefully placed around the reinforcement, in the rib space, and over the top of the blocks (to the thickness of topping required by design), all in one operation. After the necessary time needed for the concrete to gain strength, the temporary shuttering is removed, leaving an all-clay soffit ready to receive the plaster.

THE ADVANTAGES

Strength.—Properly designed *in situ* Hollow Tile Floors possess great strength combined with light self-weight. The good bonding between the concrete and the grooved blocks ensures that the stresses from concentrated loads are well spread over the structure, and the monolithic character of the floor makes it particularly suitable where vibrations from sources are to be expected.

Adaptability.—The *in situ* Hollow Tile Floor can be designed for wide spans without intermediate supports. Moreover, bays need not necessarily be rectangular on plan and can be constructed to almost any plan shape without undue extra cost. Cross-reinforced floors, needing no secondary beams, may be built with uninterrupted soffits. The Hollow Tile Floor, with its strength and weight-saving properties, is also particularly suited to the construction of cantilevered balconies etc.

Heating.—Panel heating, heating coils, air-conditioning ducts and mains services may be incorporated in the floor during the construction stage.

Fire Resistance.—Protection to the concrete and reinforcing steel, provided by the fired Clay Blocks and Filler Tiles, gives the *in situ* Hollow Tile Floor excellent resistance against fire.

A hollow tile floor is a quality floor



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a spire travels to its church

Architect:

Gerard Goalen,
B. Arch., A.R.I.B.A., A.M.T.P.I.

Contractors:

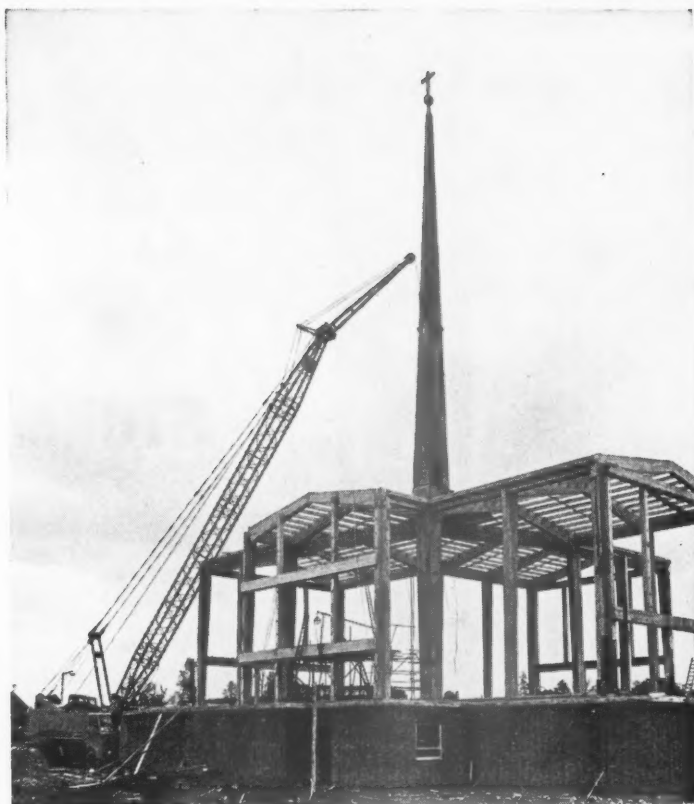
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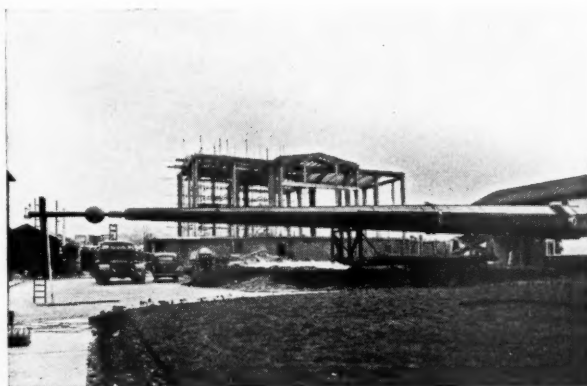
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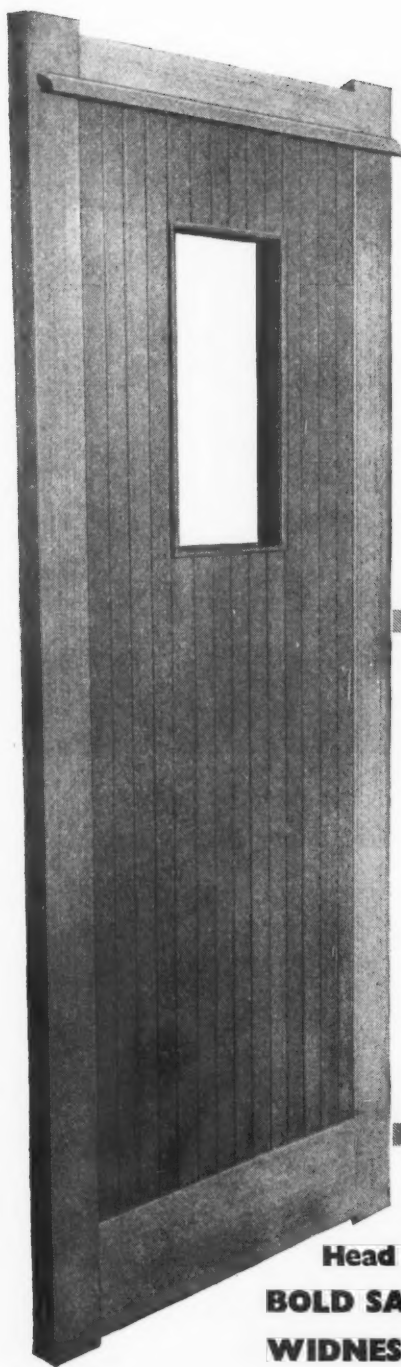


85 ft. high prefabricated timber spire being mounted on the roof of the Church of Our Lady of Fatima, at Harlow, Essex.



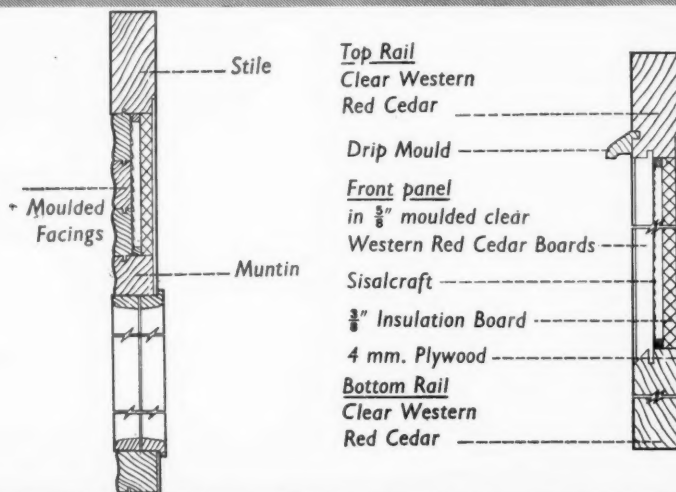
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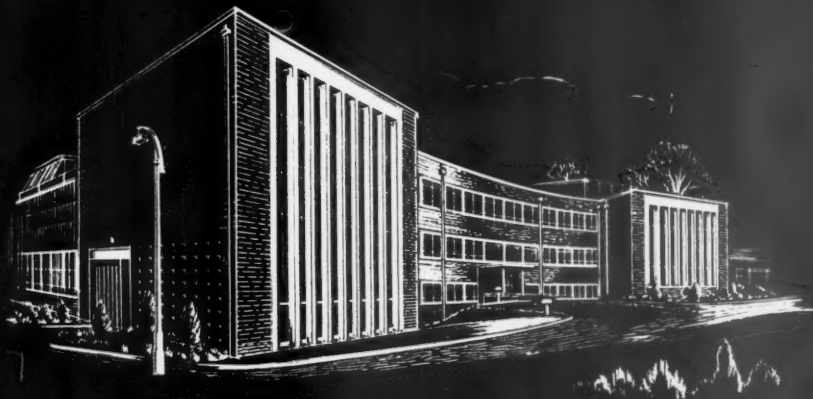
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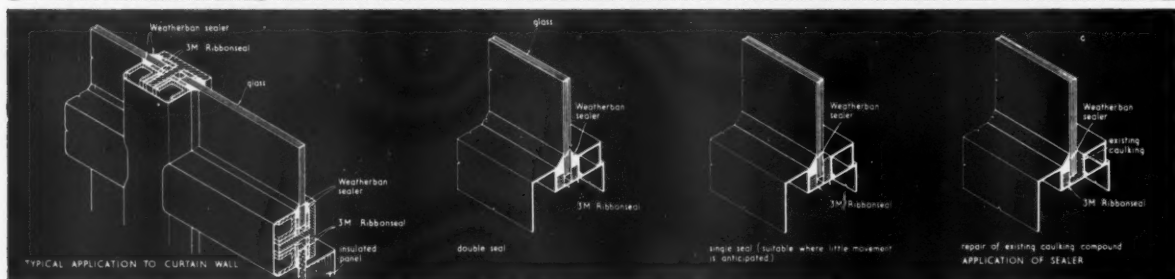
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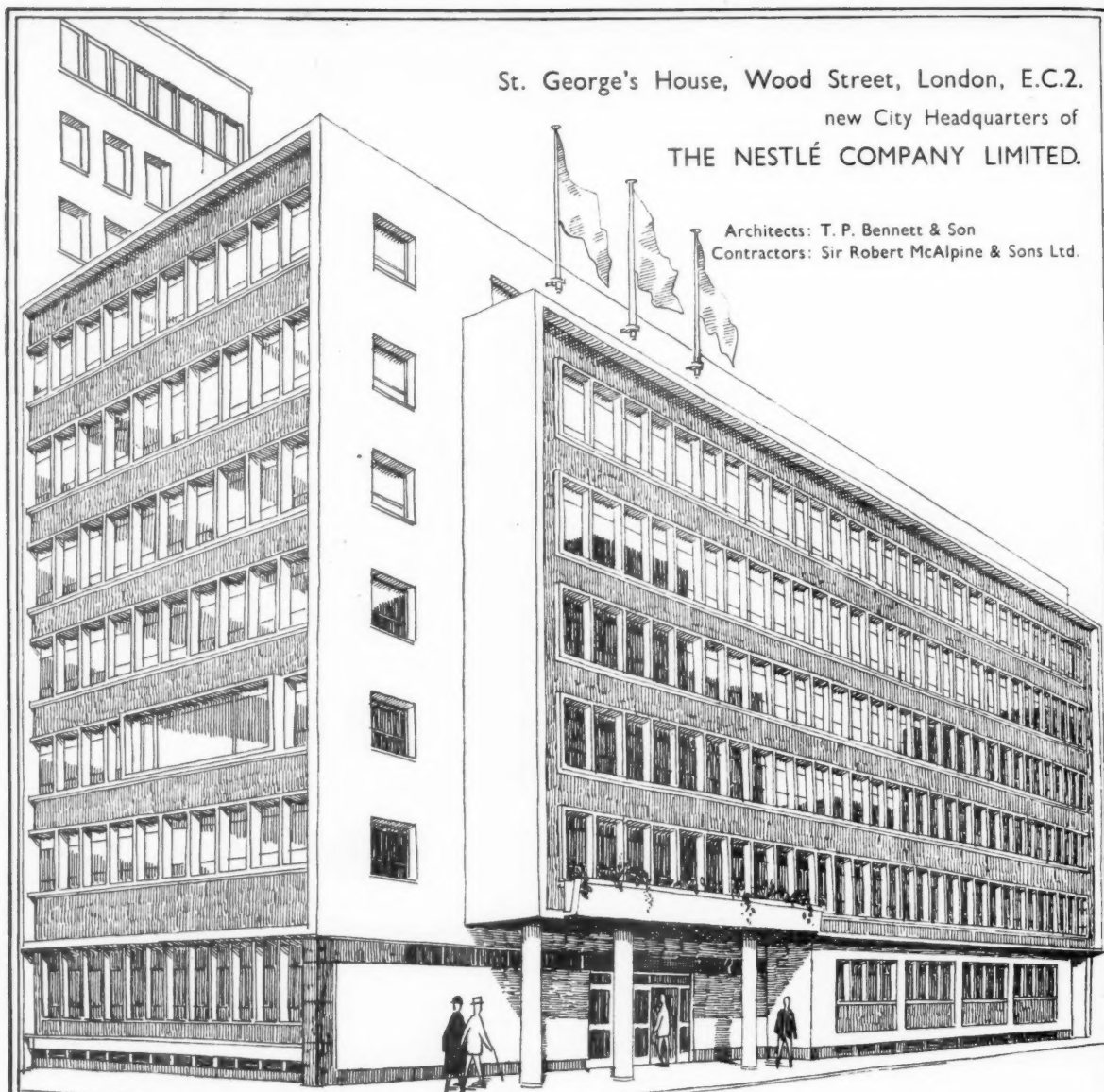
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Architects: Cotton, Ballard & Blow, Waterloo Street, Birmingham 2.

Contractors: Sir Robert [McAlpine] & Sons (Midlands) Ltd., 80 Park Lane, London, W.1.

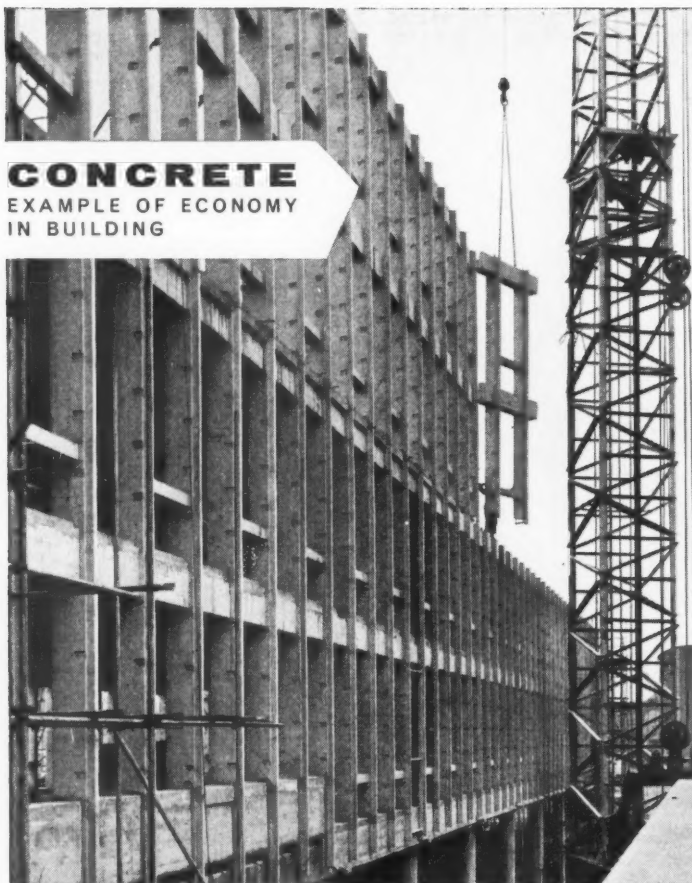
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The precast concrete frame of this building was constructed at much less than usual cost. This was achieved by early consultation and close liaison between architect, consulting structural engineers and the Bison organisation and the use of single and double H-frame construction, spine beams and spine columns.

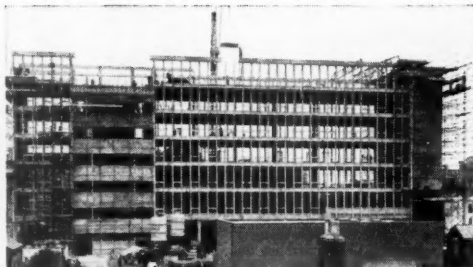
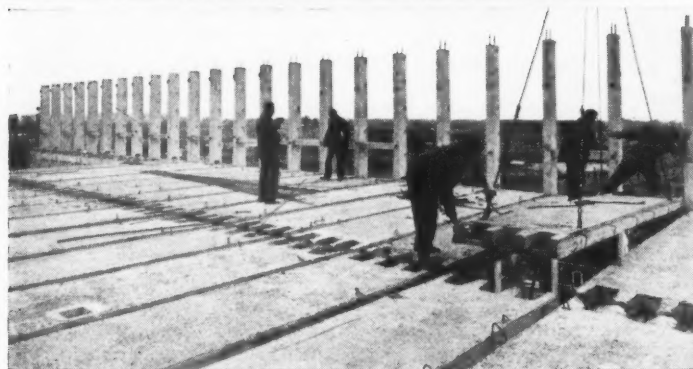
The main block is 180ft. long and 40ft. wide, with fair-faced round-nosed exposed mullions at 4ft. centres. Constructional stiffness is provided by means of the two end walls and the precast lift and staircase wells. Each suspended floor acts as a horizontal wind girder, construction consisting of 3ft. 6in. wide Bison hollow prestressed units with 6in. wide *insitu* concrete joints between, these being aligned with the mullions. Stirrups, projecting from the precast floor slabs, transmit the horizontal wind shear. Horizontal steel is used to tie the H-frames together and also to tie them into the *insitu* joints.

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Architect: Arthur Ling, B.A., F.R.I.B.A., Coventry City Architect
Consulting Structural Engineers: Husband & Co.
Contractors: W. H. Jones & Sons.



TOP LEFT: Typical two-storey H-frame being lifted into position, showing repetition along main elevation.

ABOVE: General layout of precast concrete H-frame between first floor and roof.

LEFT: Precast prestressed concrete floor slabs being fixed, showing projecting stirrups. About 400 floor slabs of this type were used.



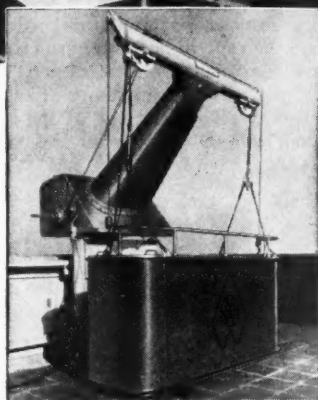
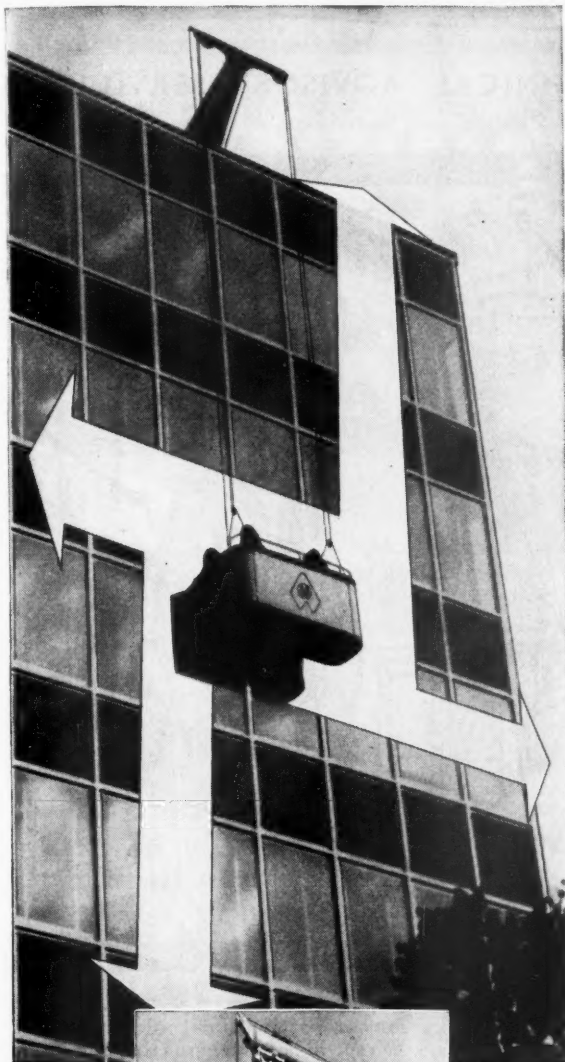
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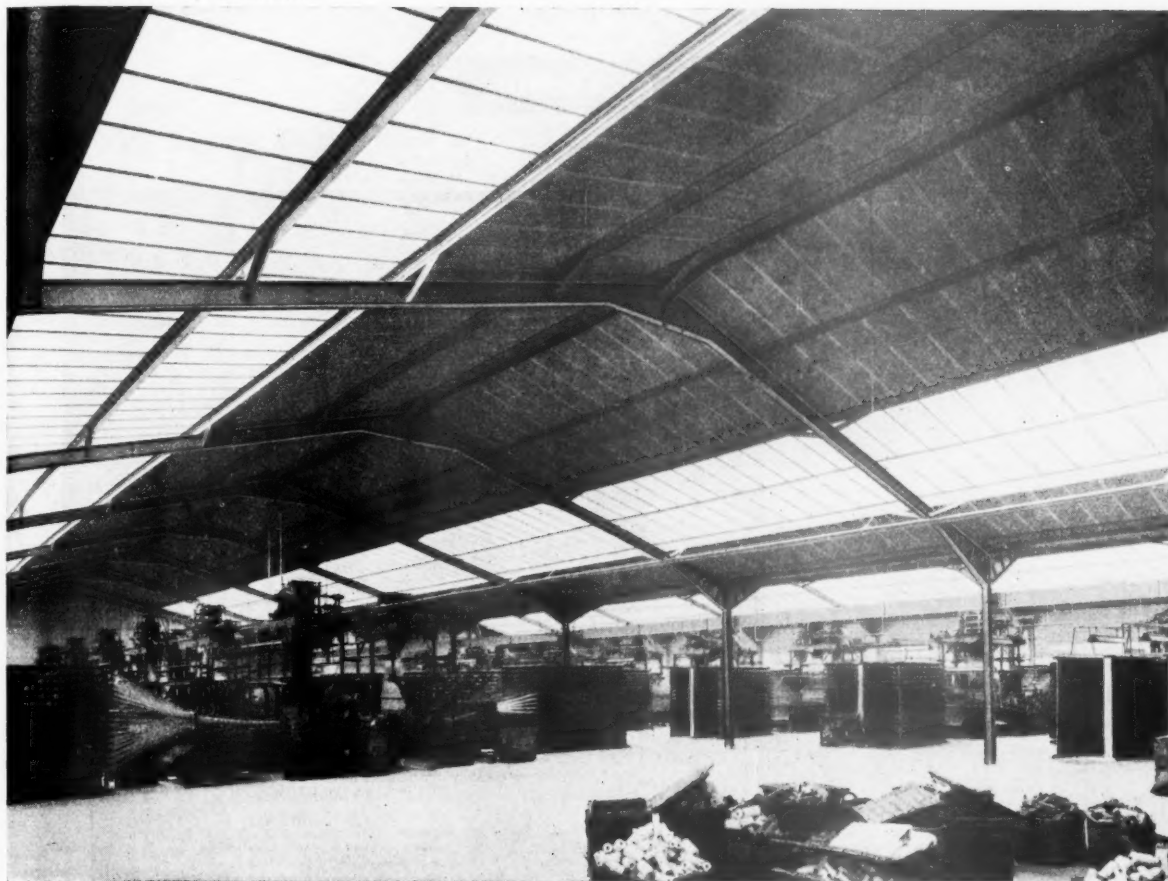
Architects: Cecil Howitt & Partners
St. Andrew's House,
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Moir and Bateman, architects.



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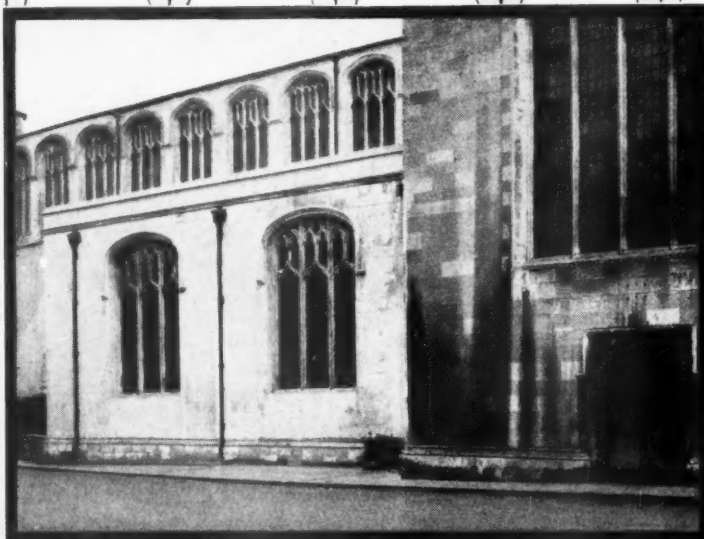
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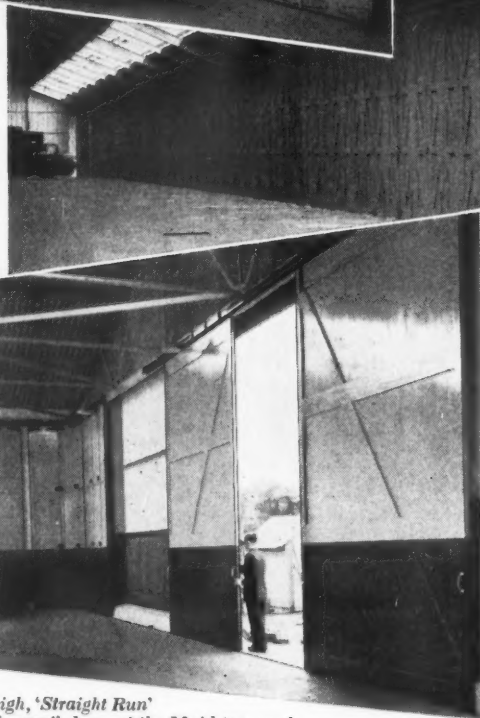
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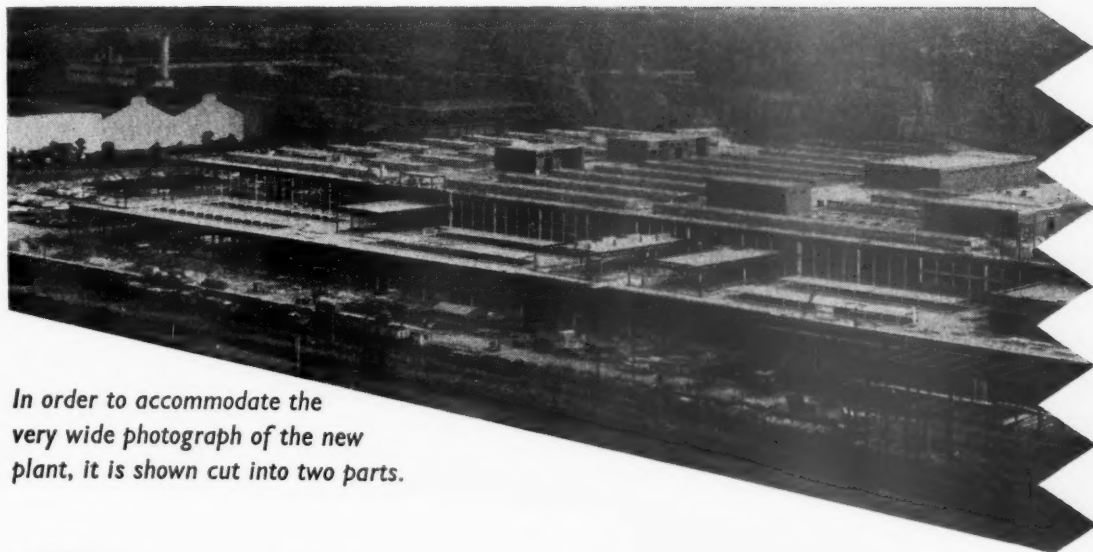
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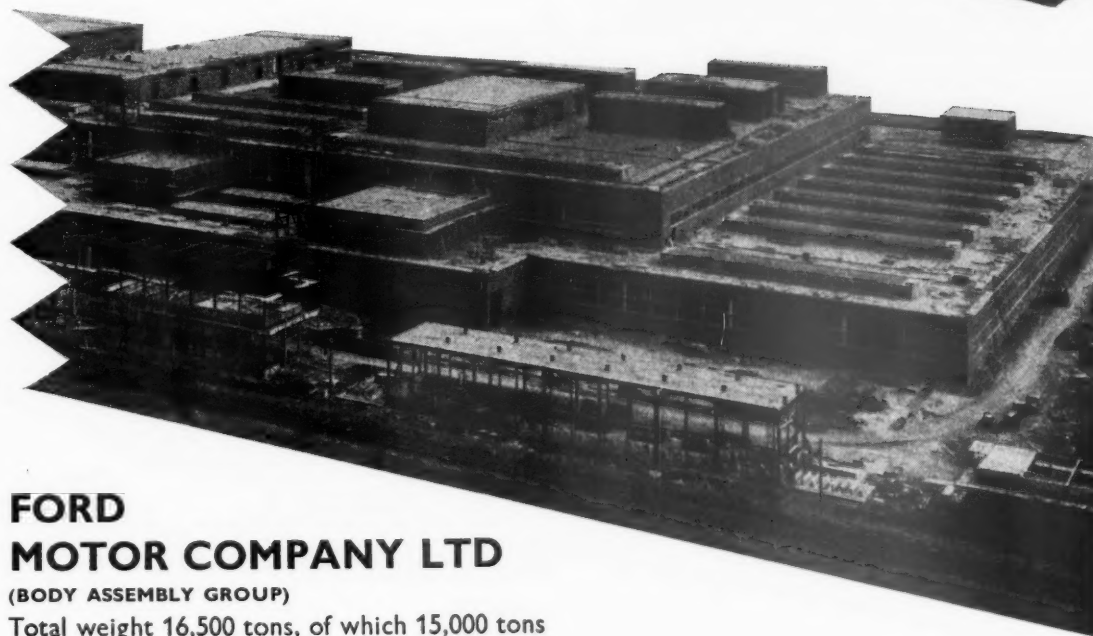
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B.A. JOURNAL

SEPTEMBER 1959



JECTING THE PILE SHAFT

The shaft of the pile is built up by placing successive charges of the semi-dry concrete into the tube and ramming each charge. The tube is gradually withdrawn by means of the cables attached to the lugs at its top. This dual action forces the concrete inwards and outwards, consolidating it into a dense shaft which compresses the surrounding subsoil as it is forced from the top of the tube.

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FRANKIPILE

When they are installed, it is normal practice to finish off the pile about a foot above the required level, and then to drive it further greater

the required depth by the use of a gravel plug at the bottom. This is a process which at this stage of the operation offers an essentially two-fold advantage. (a) It seals the tube against water on the way down; and (b) the long hammer drop ensures blows of greater intensity (although they cause less vibration) than would be practicable if the hammer were applied to the head of the casing. Obstructions in the subsoil are thus more readily overcome.

Secondly, the bearing capacity of a Frankipile is not calculated from a set predetermined by empirical formulae.

LATE NEWS

REDEVELOPMENT OF THE GORBALS

Piling is now being completed for four 17 storey blocks of flats for the Corporation of the City of Glasgow. The piles were installed to depths averaging 55 ft. below ground level and are designed to carry a working load of 45 tons each. More than 1,000 piles are required to support these 4 multi-storey blocks, and the piling has been entrusted to Messrs. Frankipile Limited, of 39 Victoria Street, London, S.W.1, who offer free literature and advice on piling problems to those Architects and Engineers who wish to avail themselves of this service.

It is assessed from conditions actually encountered when driving the pile and in forming its bulbous base. In this way, when the pile comes to form the pile cap, the top of concrete

THE FRANKIPILE

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Piles are normally tested to a load of 50 per cent greater than the designated working load, and one of several methods may be employed to test them.

These methods are the dead load test, in which the weight is provided by successive increments of kentledge bearing directly on the pile cap, and two types of jack test. In the first of these types the weight of a full test load of kentledge is gradually transferred on to the pile by means of the jack. In the second, the jack operates not against kentledge but against the uplift obtain from adjacent piles.

These methods can be relied upon to give equally accurate results, the choice between them generally depending on site conditions and the type of kentledge available.

Whichever method is used, readings are taken at agreed stages during the process of incremental loading until the pile is carrying the full test load. The full load is allowed to remain on the pile for a determined period, which is normally 24 hours.

After the recording of any settlement which may have occurred during this period the load is gradually reduced again. Readings being taken at each stage in the way as when the load on the pile was increased.

When the pile is completely free of final reading is taken. The difference between this and the reading under the full test load is recorded as the permanent settlement.

Piles are normally tested singly but may also be tested in groups.

The efficiency of the piling process is best illustrated by summarising its advantages in the following respects:

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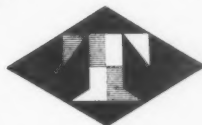
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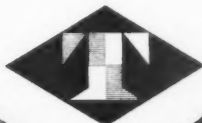
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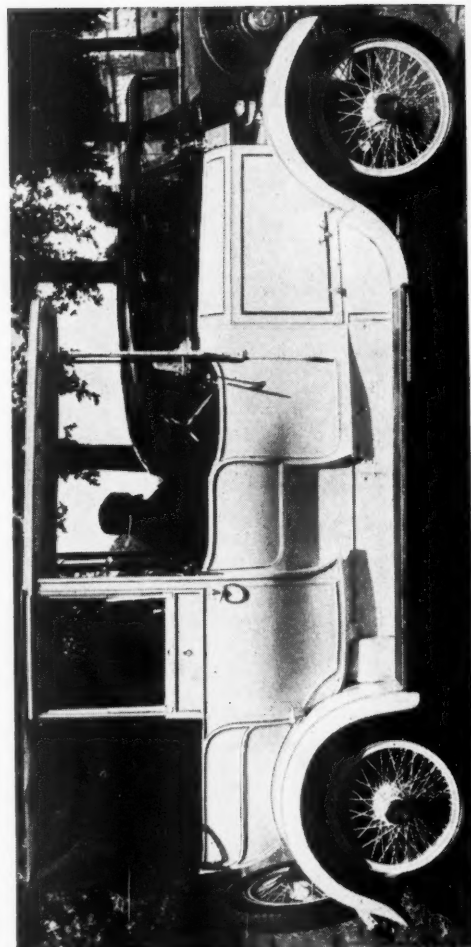




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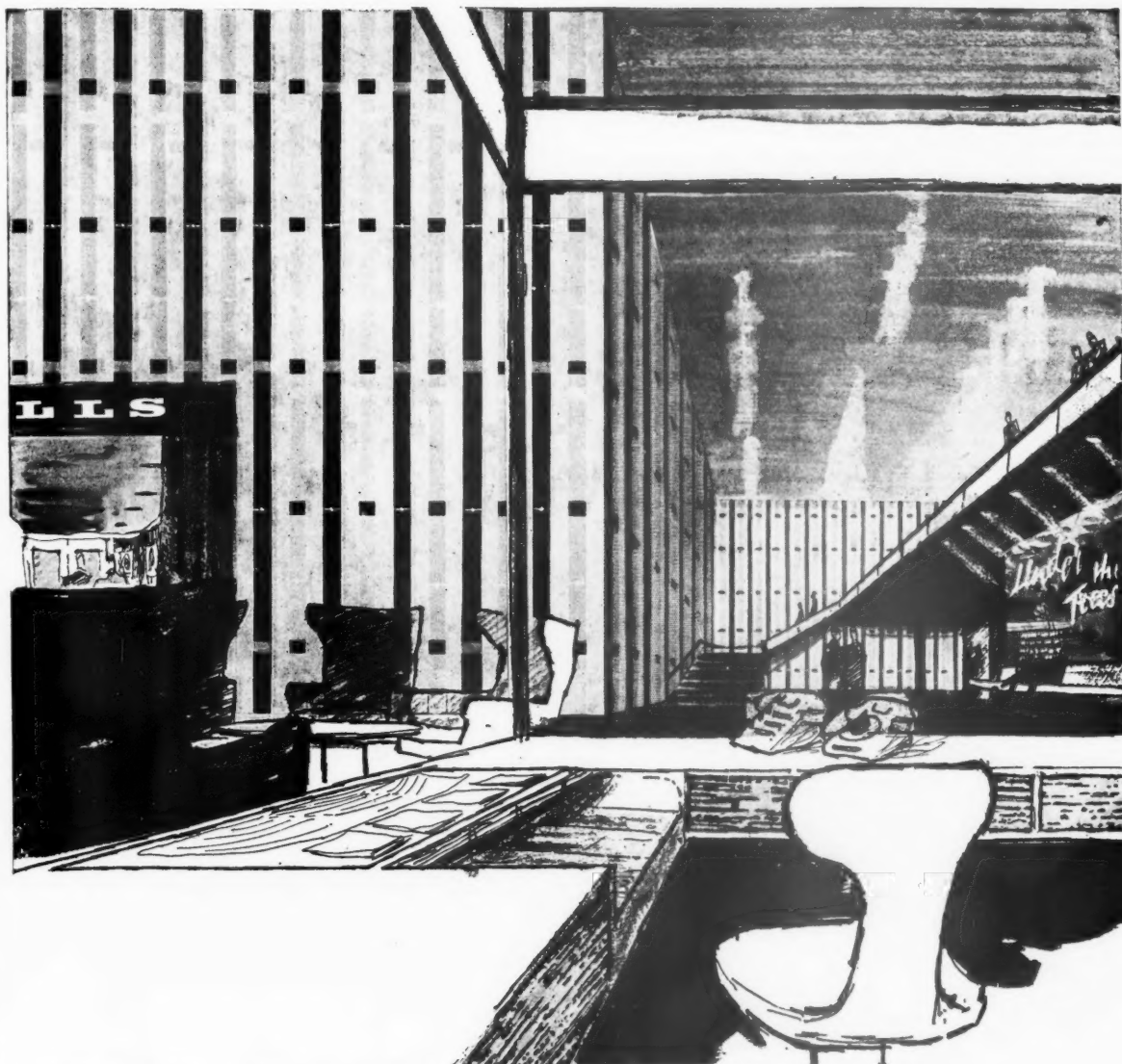
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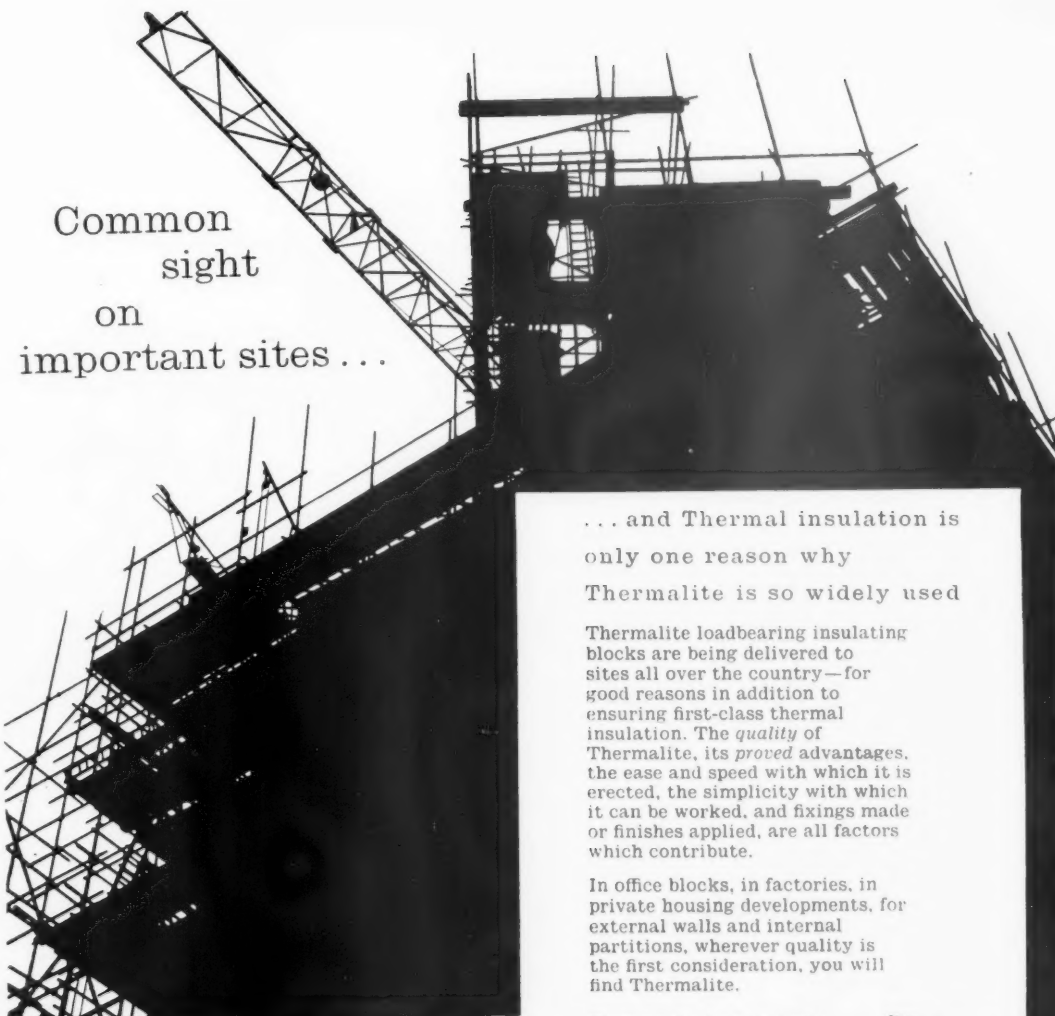
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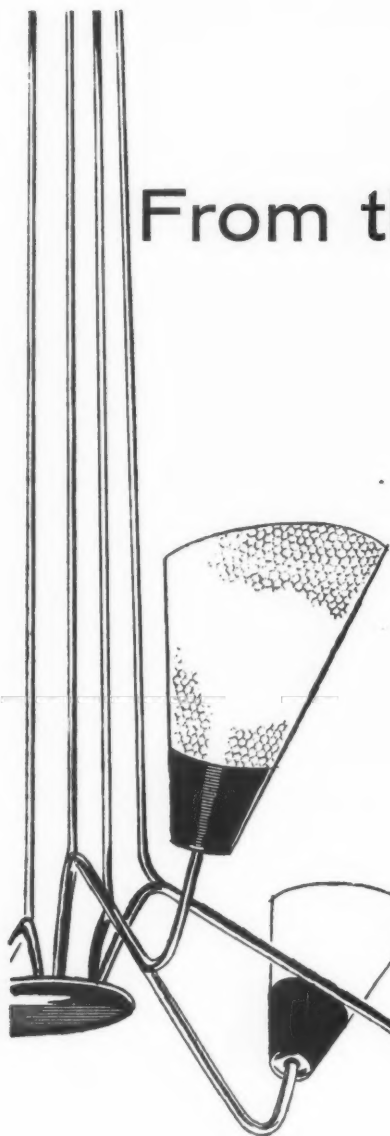
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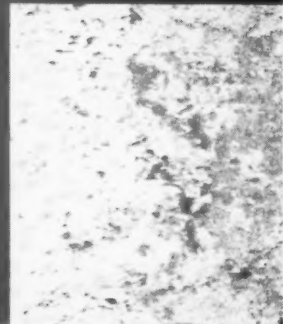
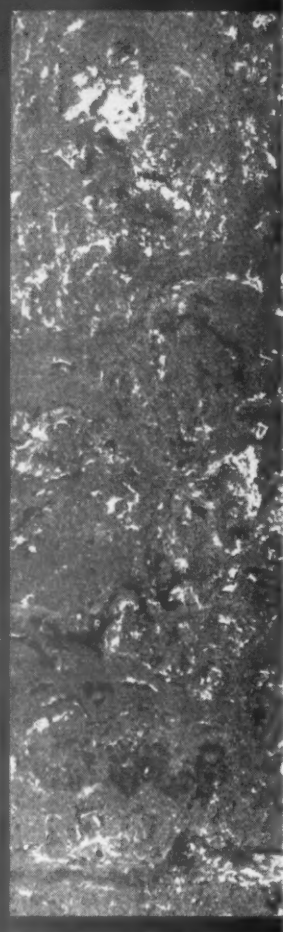
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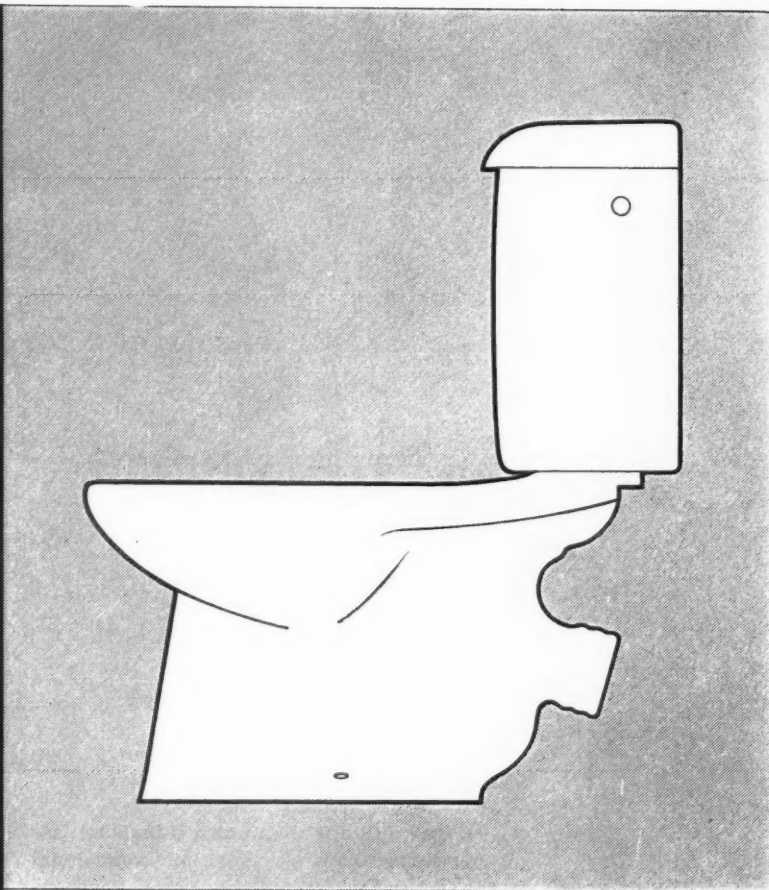
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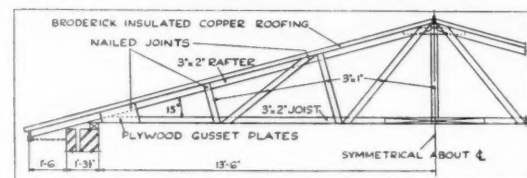
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SEPTEMBER 1959 THIRD SERIES VOL. 66 NUMBER 11 THREESHILLINGS AND SIXPENCE

EDITORIAL

The Building Exhibition

The Building Exhibition will be open at Olympia from Wednesday, 18 November until Wednesday, 2 December, inclusive.

Admission tickets for members will be enclosed in the November JOURNAL which will be published on the eleventh of the month.

By gaining admission with these tickets members will ensure a donation of 2s. 6d. to the Architects' Benevolent Society on each ticket. This generous arrangement has been made by Mrs. M. A. Montgomery [*Hon. A.*], who will also provide the usual room over the Addison Road entrance for use as the R.I.B.A. Club, where members may rest and order refreshments. Each admission ticket of the kind mentioned above will also serve as a voucher for two free teas, again through the kindness of Mrs. Montgomery.

Code of Procedure for Selective Tendering

The Joint Committee on Tendering Procedure in their Report in 1954, made certain important recommendations as to selective tendering, and the Joint Consultative Committee of Architects, Quantity Surveyors and Builders whose establishment was also recommended by the earlier Committee, have now produced a Code of Procedure for Selective Tendering, which will be introduced formally to the industry at an open meeting to be held at the R.I.B.A. on a date to be announced later.

The Code whose production occupied the Joint Consultative Committee and its constituent bodies for several years, sets out very clearly the procedure which should be adopted universally throughout the building industry, and should be instrumental in ironing out many of the irregularities which unfortunately have existed up to now. Advice is given on most matters relating to tendering, including the preparation of the list of tenderers; the information which should be given in the invitation to tender; the form of tender itself; the time for the preparation and submission of tenders; and the procedure for the opening of tenders and for notifying the results. There is also some extremely useful advice as to the examination of the priced bills and the adjustment of errors: the Code lays down a method whereby, before the builder's offer is accepted, errors in pricing may be corrected,

and states that 'it should be a condition of tender that palpable errors in pricing or errors in arithmetic discovered before the acceptance of the builder's tender should be adjusted in accordance with the Code'. Indeed, the Code is of such importance that no firm of architects, quantity surveyors or builders should be without one; copies may be obtained (price 2s.) from the R.I.B.A., the R.I.C.S., or the N.F.B.T.E. There should, in future, be no excuse for anyone connected with the industry 'not knowing the rules'.

The full text of the Code appears later in this issue at page 397.

Building Centre Recorded Talk on 'Curtain Walling'

The second Building Centre Recorded Technical Talk is now available to R.I.B.A. Allied Societies, Schools of Architecture and Technical Colleges. It is on 'Curtain Walling' and is by Mr. W. A. Allen [*A.*], Superintending Architect, the Building Research Station, and Mr. Edward D. Mills, C.B.E. [*F.*].

At the 1954 British Architects' Conference at Torquay, Messrs. Allen and Mills gave a most stimulating joint lecture on what was then a comparatively new subject. In this 45 minute recorded talk they bring their facts and opinions up to date.

The tempo of this talk is excellent. The informative duet of the principal speakers being relieved by the deep bass of Mr. Eric Bird [*A.*], whose role is to put the awkward questions. Simultaneously, a film strip of 131 pictures come and go illustrating examples of curtain walled buildings in the U.S., Europe and this country. Unfortunately the colour comes over rather garishly in too many of them.

The first recorded talk, 'Coventry Cathedral', by Mr. Basil Spence, President, has been enthusiastically received.

Borrowers of these recorded talks have to provide themselves with a record player or radiogram and a 35 mm. filmstrip projector. The talks are sent in containers, with full instructions, and there is no charge for borrowing, except payment of return postage. There are six copies of each talk.

Other recorded talks are in preparation. The most advanced is 'Glass in Building' by Mr. G. A. Jellicoe [*F.*] and Mr. S. Sternfeldt [*L.*]. A talk on 'Building in Ancient Greece' has been promised by Sir John Summerson, C.B.E., F.S.A. [*A.*], who has visited Greece this summer.

Public Architecture and the Disabled

The Central Council for the Care of Cripples would like to draw the attention of architects to the following extract from *The Long Road Back*, by E. Le Compte (Gollancz). Mr. Le Compte, a Columbia University professor, suffered from polio.

'My principal plea', he writes, 'would be to architects and engineers for a world with lower curbs, and fewer and lower steps (and those with grasp rails). I'm not likely to have much success with this plea, when Hebrews xii: 13 has gone ignored for so long: "Make straight paths for your feet, lest that which is lame be turned out of the way". We do everything for automobiles, nothing for pedestrians. I'm certainly an authority on being "turned out of the way", in all directions, but I'm not thinking only of—how many million?—lame: I'm thinking of such groups as our growing population of the aged, and those with heart disease. They're being blocked, and their lives shortened, by these daily impediments to which no one gives a constructive thought.

'A façade of steps on public buildings has been the architects' only idea for an imposing front for centuries; it's high time they had a second idea. Our era has not seen a greater miracle of vigour than Sir Winston Churchill; but when, at 81, he visited the Aachen town hall to receive the Charlemagne Prize, he faced what was too much even for him: 72 steps. In public view he made his way up 20, unaided; behind a curtain he was carried up 52.

'... Pennsylvania became, on 1 June 1957, the first state to put into effect a building code that eliminates some of these architectural hazards and barriers. But, astonishingly enough, hospitals are among the buildings exempt from the new regulations—apparently on the theory that there will always be a stretcher handy.'

Well, there it is, one more thing for architects to think

about, although Professor Le Compte's examples are not the work of contemporary architects, most of whom contrive to avoid the use of monumental flights of steps.

Cover Picture

A non-technical talk on the latest work by Le Corbusier, le Couvent de La Tourette, Eveux-sur-Arbresle, near Lyons, was given by Father I. Evans on the B.B.C. Third Programme recently.¹

Father Evans recalled that Corbusier had conceived the basic idea of *unité d'habitation* on a visit to a Carthusian monastery as long ago as 1907, and now the wheel has come full circle with this opportunity to build into a monastery and church for a community of one hundred Dominican friars, the experience gained in the *unités*.

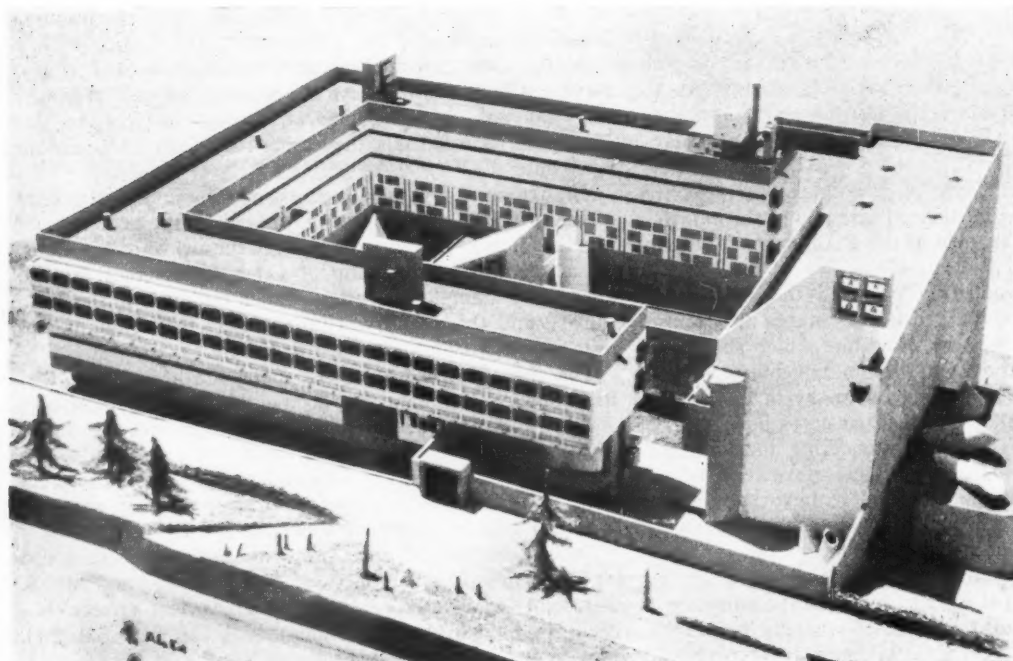
The invitation in 1953 to design La Tourette was due to the influence of Père Couturier, a Dominican priest, who was also an artist and art critic; and who realised that the processions and ritual of the monks should determine the scale and dimensions of the building and could be interpreted in terms of the *modulor*.

As can be seen from the model, Corbusier has used a traditional plan form, the church closing the fourth side to three residential wings. Each of the hundred cells is a *modulor* unit with a balcony looking out over the countryside. This gives a strong pattern above the common rooms, the refectory, library, etc., which have been given glazed screen walls stiffened with slender concrete mullions at intervals in geometric progression.

Construction is in reinforced concrete with the characteristic rough finish, and internally fittings are said to recall those to be found in second-rate French hotels.

Once again Corbusier has astonished us.

Printed in THE LISTENER for 27 August 1959.



Model of Dominican Monastery at Eveux made by Father Sage

Photo: Récamier



The R.I.B.A. Dining Room

'On the new top floor by Playne and Lacey, there is now a fine dining room, decorated, furnished and equipped by Margaret Casson. The food is cheap and good, and is supplied in considerable variety. There is a splendid view from the windows of the new B.B.C. building and other national monuments and there is always a chance of cornering the Secretary or some other member of the staff. All this splendid new setting requires is more plain eaters. Think of the convenience to committee men due in one of those entrancing rooms on the second floor at 2.15! Think of the aesthetic pleasure of eating in one of London's few architect-designed "contemporary" restaurants.'

ABNER

(by courtesy of the Editor, A & B N)



T. & C.P.A. Diamond Jubilee

The JOURNAL offers its congratulations to the Town and Country Planning Association, the oldest voluntary Society in the world in aid of town planning, which is celebrating its 60th anniversary. To mark the occasion a New Towns Exhibition is now being held in the Main Gallery of the Royal Academy and remains open until 17 October. It has been arranged by the T. & C.P.A. in co-operation with the Development Corporations of the 15 new towns.

On 23 October a Diamond Jubilee Dinner will be held at the Mansion House.

R.I.B.A. Diary

TUESDAY 6 to SATURDAY 17 October. Exhibition of Swiss Industrial Architecture in the Henry Florence Hall. Mon.-Fri. 10 a.m. to 7 p.m., Sat. 10 a.m. to 5 p.m.

FRIDAY 9 to SUNDAY 11 October. Cost Control Conference at the Institute of Advance Architectural Studies, York.

MONDAY 19 October. 6 p.m. Library Group. Mr. W. A. Eden, M.A., F.S.A. [F] will introduce an evening on 'Vitruvius on the Nature of Architecture'.

The Architect's Place in the Building Industry

Some Reflections on Clause 5 of the Code of Professional Conduct

PREFACE

THE COUNCIL have released the paper below for publication and wide discussion within the profession. The following notes may help to explain its origins:—

(a) The August 1958 JOURNAL carried an R.I.B.A. Report on 'The Employment of Architects on the Salaried Staffs of Building Contractors'. This drew attention (paragraph 10) to the anomalous position of the architect, who 'may be employed in the industry in a subordinate capacity, but not in a controlling one, since he is forbidden to be a director'. Mr. Richard Sheppard's Ad Hoc Committee was accordingly asked to look into the question further and the review below, while not a formal report from that Committee, is broadly the result of their background work.

(b) The paper will be seen to show a bias in favour of a change in the Code. This is deliberate, in order to counter (and perhaps disturb) the weight of tradition that is bound to be against it. In no sense, however, does this imply a recommendation from the Council, who are maintaining an open mind until the profession's views are better known.

(c) Of itself a change in the Code is perhaps not crucial, and certainly not a panacea. Nobody suggests that it would be the answer overnight to the all-in service challenge. The subject does, however, serve to focus attention on a central dilemma of greater importance: Whether to regard Architecture as an integral part of Building and act accordingly; or sharpen the distinction between them, widening the gulf between the artist-consultant on the one hand, and the commercial constructor on the other? Whether, if the 'separatist' course is chosen, that will restore whatever dignity, prestige and influence the profession is thought to have lost, or merely invite the modern world of big business and high finance to by-pass the profession and to let it quietly fade? Whether in the times ahead one can maintain Architecture balanced on the razor edge between an Art and a Profession, inevitably lacking some freedoms of the one, yet foregoing many opportunities of the other? Whether, therefore, in professional conduct matters to go for a brief Code, allowing maximum latitude, and simply expressed in terms of broad principle but rigorously interpreted and enforced; or to retain a detailed Code that attempts to identify and proscribe all irregular activities that could be harmful to Architecture?

It is hoped that the paper below will prompt some thought along these broader lines. Members' comments will be welcome and should be addressed to the Secretary, R.I.B.A.

INTRODUCTION

1. These notes are concerned with Clause 5 of the Code of Professional Conduct, which forbids an architect to become a director of a firm associated with the building industry. The aim is to identify some of the reasons for this ruling, to consider their validity in the context of modern practice and to assess the benefits, if any, that might accrue if the Clause were to be modified.

2. Clause 5 in full reads:—

- (a) A member or Student may be a director of any company (except such companies as specified in Clause 5 (b)) including a building society registered under the Building Societies' Acts, the Building Centre, London, the Building Centre, Scotland and the Engineering Centre, Scotland; but his professional affix may not appear on the note-paper of the company.
- (b) A member or Student must not be a director of a firm or company carrying on business as auctioneers or house and estate agents or trading in materials used in or whose activities are otherwise connected with the building industry or trading in land or buildings for profit.
- (c) A member or Student must not carry on or act as principal, partner or manager of any firm carrying on any of the trades or businesses specified in Clause 5(b).

History of Clause 5

3. In the Kalendar of 1910-11, there appears for the first time in the then very short Code 'A member having any ownership in any building material, device or invention proposed to be used on work for which he is architect, shall inform his employer of the fact before its use'. This stood, with minor variations, for the next 25 years. In 1920 the urge for stronger measures appears, for a further clause was added stating that the profession was 'incompatible with the business of a Contractor, Manufacturer, dealer in (or agent for) materials used in buildings'. This, however, was deleted two years later and no further significant change occurred until 1935 when the present law forbidding directorships was introduced (with effect from 1937). The Practice Committee at the time cited as a typical source of worry the case of two architects inquiring whether they could become directors of a firm making and erecting steelwork. The answer had to be Yes, 'but they are now free to specify this steelwork in any contract and thus lose that independence which an architect must have in administering contracts'.

Some reasons for Clause 5

4. This brings one to the familiar arguments behind the Clause as it now stands:—
- (a) The architect must remain an indepen-

dent practitioner, free to prescribe the materials or form of construction which in his professional judgment best suit the case. Neither loyalty to a given concern nor considerations of personal profit should be allowed to colour this judgment; and client and public must be given no cause to think that they do. A professional man is paid by pre-determined fee which, once agreed, is forgotten, so that he may concentrate without distraction upon the discharge of his professional duties.

- (b) The architect is primarily concerned to create beautiful, efficient and soundly constructed buildings. The contractor is primarily concerned to make a profit. The two interests are incompatible, and to mix them is to subjugate Art and comeliness to expediences of cost, profit and technical convenience.

5. It is possible that a third reason may be found to stem from habits of thought which have their roots in the past and which, where they exist, are no less strong for being sub-conscious. The modern architect has aristocratic origins in those Renaissance men of taste and fashion who toured Italy and sought to bring back something of her artistic inspiration. They returned with highly sophisticated theories of design, not easily studied outside Italy and beyond the intellectual grasp of most homely master builders. These designs

demanded for their execution that craftsmen, familiar enough with native conventions in design, should forego invention and merely carry out the instructions of a single controlling mind. Thus from the start there occurred a gap in status between architect and builder born of a sharp difference in birth, social accomplishment and breadth of education.

6. In the 19th century, the Romantic Movement, the Industrial Revolution, Victorian notions of professionalism and of social strata must all have combined to harden these differences into a settled pattern. The increasingly grimy townscape and the mundane traffic of living was no medium for a man conscious of his own aesthetic sensibilities. If 'trade' had always been a little vulgar and too overtly intent upon a profit, that was acutely so now. It was thus scarcely thinkable that Architect and Builder, so different in background, taste and education should associate in the same enterprise.

7. Nowadays these notions will be dismissed as outmoded and therefore irrelevant, and so to all appearances they are. But as legacies of history they may still be caught lingering around the word 'commercial', rendering it disreputable and generally colouring one's thinking. Not that it may not be perfectly legitimate to regard trade and profit as both disreputable and vulgar; but it would be a pity if that kind of emotional irrelevance were to cloud one's judgment of whether Clause 5 is or is not a logical Clause, essential to the profession's well-being.

Metaphysics aside, however, there remain the two solid arguments in 4 above, which for convenience are now labelled Integrity and Design:—

Integrity

8. This may be the central argument for retaining Clause 5. The fear is that the architect will lose his, independent and impartial position, with a corresponding loss of professional integrity and, no less important, the appearance of having done so. That being a director could, in the wrong man, imperil his integrity is beyond doubt. The question is whether it would strain integrity so much more than would many other activities that a special clause is needed to forbid it. It may be that the strain upon professional integrity that would face an architect-director is only one of very many, and more common, strains already inherent in normal practice.

9. There is for instance the familiar charge that the architect has a vested interest in high costs because his fee is calculated as a percentage of the final cost. Less obviously, any principal in private practice must be faced a dozen times a month with issues which professional integrity alone will cause him to resolve with honour to himself and justice to his client. It cannot, for example, be true that every architect puts into every building the maximum work that is possible, or he would be out of

business. Since a primary duty to his client as well as to himself is to stay in business, he must have some idea, even sub-consciously, of the margin between his expenses and the anticipated fee which he aims to 'make' as profit. Thus he is bound to decide at some point that further work is not practicable whatever the ultimate in perfection might seem to demand. Expressed another way, the less work an architect can put into a project consistent with not being found out, the greater profit he will make. That he does not skimp in this way is due to artistic integrity *vis à vis* the building and moral integrity *vis à vis* his client. These are precisely the attitudes the Code aims to promote; and once having prescribed them in unequivocal terms for universal application, it may not be practicable to specify too exactly how they apply in given circumstances. To do so is to risk singling out for condemnation one set of conditions which if allowed might lead to abuse, while ignoring a host of others which already and no less certainly can do so too.

10. Then a director (especially if full-time) of a public company is more often than not paid by fixed fee or a salary that does not vary directly in accordance with the company's prosperity. To become one is therefore less likely to lead to corruption than to hold substantial shares, whose value should certainly reflect directly the company's progress. Yet, since nobody can be forced to declare what shares he holds, nothing specifically is said about shares in the R.I.B.A. Code.

11. Again, the Code allows an architect to be consultant to a firm manufacturing building materials. Is it realistic to regard him as having no personal or financial interest in advancing that company's prosperity merely because he is paid by fee and not by commission? Instead of a commission, the directors might from time to time offer to 're-negotiate' the basis of his remuneration in consideration of his close attention to their interests. This seems a distinction without very much difference.

Design

12. This is the second obstacle—the fear that architect-directors would yield to commercial pressures, and good design would be submerged.

13. Could it fairly be maintained, however, that where contractors at present do their own designing, their salaried architects are so ground down by commercial pressures that appalling design consistently results? Is it not rather that in these circumstances *superlative* design seldom results—as for that matter it seldom results anywhere else? The difficulty perhaps is that architects, to their credit, yearn for the superlative whereas good builders and their direct clients will be mostly content with the thoroughly adequate.

14. It may not be to the good of the profession, however, to organise it as if the superlative were likely to happen daily

and Corbusiers abounded: to allow in fact the best to be the enemy of the good by implying that as a masterpiece is unlikely to result when contractors do their own designs, we are not interested in seeing their work raised to the highest level possible. This is what in effect the profession does say, for to allow 'the leader of the building team' to be a subordinate employee only is practically to guarantee a subordinate standing also for architecture in the company's policies. Clause 5 ensures that if the salaried architect is too successful and therefore potentially influential in deepening a builder's understanding of what makes for good architecture, he is thrown out for unprofessional conduct. It is not as if the profession was likely thereby to stop builders doing their own designs. They always have done some since earliest times and, short of statutory prevention, it is only realistic to assume they always will.

15. It might, long ago, have been a logical, defensible policy to decree that, like quantity surveyors, architects should not be employed at any level whatever within building companies. As things stand, architects are in, and an R.I.B.A. Report on the subject (August 1958 JOURNAL) makes it clear that it would now be impracticable to attempt to weed them out, assuming one wanted to.

16. It would, no doubt, be right to fear for Architecture, and particularly for the chances of any epoch-making break through, if a change in the Code resulted universally in a total integration of architect and builder. Nobody, however, seriously suggests that either party would want full integration to occur. For the architect, it would essentially be an alternative (and a limited one at that) to the present range of fee-paid and salaried practice, not a substitute for it. Some 6 per cent of the profession are in industry and commerce as a whole; perhaps 1 or 2 per cent are in contracting firms. A landslide seems unlikely.

Possible Advantages of Amending the Code

17. This paper has dwelt primarily upon the reasons for Clause 5 and some of the arguments surrounding it. Clearly, however, no changes are worth making if they merely satisfy logic and fail to bring tangible advantages that outweigh the drawbacks. Accordingly limiting consideration to building contracting companies only, some possible merits in allowing architects to become directors are briefly tabulated:—

(a) A change should bring into the counsels of the R.I.B.A. and therefore into the thinking of the profession a keener business sense, and a fuller understanding of costs and technology as seen from the contractor's standpoint—with perhaps some significant consequences for architectural education.

(b) Much is said and written about the effect upon design of modern complex

technology; of the resulting growth in negotiated contracts; and of the general need for architect and builder to draw closer together. To allow the architect to accept a directorship with a contractor (as an alternative, not an addition, to his existing form of practice) would be an experiment in co-operation which would not be irrevocable and might be profitable. Such experiments would have the merit that if some new, satisfactory pattern is to evolve over the years in the building industry, the profession would be in the van of the movement, rather than appearing to drag its feet.

(c) If the right men were recruited as architect-directors, their performance might help to counter sweeping and ill-informed assumptions among the public that architects know and care little for the mundane issues in building or the proper conservation of their clients' money. Architect-directors would in fact be no more efficient and cost-conscious than leading members of the profession already are, but their existence could raise respect for the profession among a 'nation of shopkeepers' which still values sturdy commonsense well above aesthetics.

(d) It is scarcely fair to architects already in contracting firms to make claims about leadership of the building team

and then to deny them the chance to achieve their natural goal.

(e) The architect-director could become an outpost among building contractors, leading them to a clearer understanding of what architecture is about, improving the quality of speculative building and in particular interpreting the schemes of private architects.

(f) At a time when many private architects are conscious of a contracting range of work for them, it would provide stimulus and encouragement if the scope were widened by allowing those with a bent for business the right to exercise it.

Possible Formulae for Changing the Code

18. It has seemed convenient to concentrate on building contractors; but before any amending legislation one would need to think over all the other fields of work which architects might enter if the present law were merely rescinded without limiting conditions.

Many possibilities will at once occur to practising architects; but the more common variations might be: Architects who would form their own building company so as to provide an all-in service (presumably not unlike Nervi); accept directorships with existing building contractors; see the need for some middleman service such as Intercon provide and seek to meet it; deal in

real estate; become directors (probably part-time) of firms making building materials; and set up some ancillary services to the architectural profession on a commercial basis.

For some of these (if they are to be admissible activities at all) the principle of the frankly declared interest that obtained from 1910 to 1935 may be felt to afford enough safeguards. On the other hand, it may be that a clearer principle less open to abuse is that adopted by the Institution of Civil Engineers, who simply rule that a member may act as a private consultant, paid by fee, or be in a commercial enterprise, but on no account must he be in both simultaneously.

19. Either ruling would have its hazards for some of the categories listed, but they may not be so acute as to justify making no change at all. It must always be difficult in any Code of Professional Conduct, having enunciated general principles, to know how far to spell them out in terms of practical situations. No form of words in fact can prevent a man violating the spirit of the Code if he is intent upon doing so. It is therefore important periodically to see that the words used to get as near as may be to an unattainable end have not inadvertently placed a disproportionate restriction upon members and their livelihood, to the ultimate detriment of Architecture.

Three photographs from the exhibition of Swiss Industrial Architecture being held



1. Canteen block, Siemens Electrical Products Ltd., Fahrweid, Weiningen-Zürich, 1959
Architect: Walter Niehus, P.S.A.

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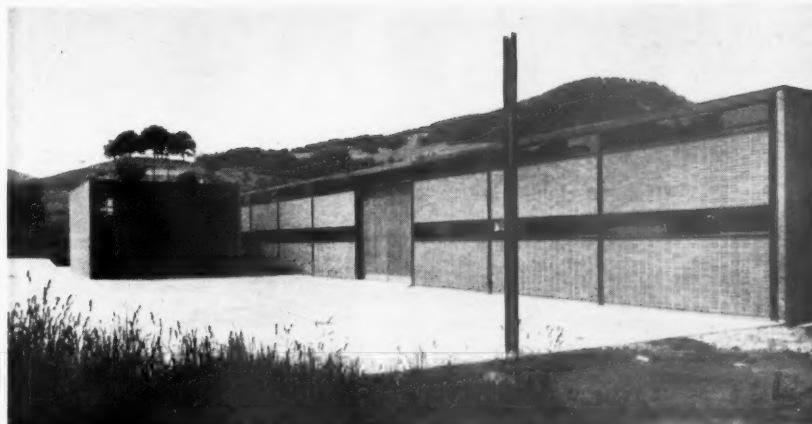
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2. New building, Canton of Zürich Electricity Works, Dietikon-Zürich, 1958
Architect: Robert Winkler, B.S.A.

3. Metal Workshop, Kleinfühl, Solothurn 1958
Architect: Franz Füg, B.S.A.

Spence on Safari

Report of an illustrated talk given by the President at the R.I.B.A. on 16 June

The President began his talk against a background of native African music, the beating of tomtoms and the wailing of pipes. The African continent, he said, was extraordinarily full of strange vitality and the strangest of qualities, and, apart from a little Cape Dutch architecture, his pictures would be of wild animals, of wonderful natural features, of one of the greatest works of modern times, the Kariba Dam, full of imagination and a legacy to the future from this generation, and of work done 2,000 years ago at Zimbabwe.

His first pictures were of wild animals in the game park only five miles from the centre of Nairobi—so close, in fact, that on occasion lions had wandered down the main street. There were photographs of a honeymooning lion and lioness, giraffes and rhinoceroses. A giraffe weighed two tons, and two tons of meat in rhythmic gyration was a sight worth seeing. In photographing the rhinoceroses he had walked towards one to get a better picture, and it had then started to walk towards him. 'That was the point', the President added, 'where Spence went on Safari again.'

Africa had a scale all its own, a bigness which could be appreciated only by going there. That had been brought home to him by seeing the Victoria Falls, which the local people called 'The place which spoke with a voice of thunder.' This sense of bigness was also emphasised in the most exciting way in Rhodesia by the frequent occurrence, often at the tops of hills, of enormous rocks of the most fantastic shapes, Henry Moore in character and tremendously impressive.

One such grouping of masses of rock was at Rhodes's tomb. The story was told that Rhodes, finding this site, had told his followers that he wanted it to be his burial place—a macabre custom in those days.

Later they had difficulty in finding it, which was understandable, because the country was strewn with such formations, fantastic boulders put there by a giant's hand. Architects had much to learn from these formations, from the simplicity and unity of the material and the scale of the formations. One had the same feeling as when visiting Stonehenge. At Rhodes's tomb was the first work of man to be shown in his photographs, an incongruous memorial building which looked puny and futile in such surroundings. Each one of these rock groupings could be studied as a composition of its own.

This part of the world also abounded in cave drawings. A great deal had been written about the cave drawings of Lascaux, the Dordogne, North Africa and the Pyrenees, but concentrated in a very small area in Rhodesia there were some of the finest cave drawings in the world, perfect drawings of animals and of hunters, with the colour and rhythm of a modern painting, say by William Scott—only, the President thought, better. They were the works of man thousands of years ago, but in their simplicity, directness and authority they were an example which in our present civilisation we should do well to try to follow.

Going on to Johannesburg, man in his search for gold had provided an extraordinary skyline by his dumps of waste material from the mines. Sometimes they were extremely exciting and sometimes in rural surroundings they had eroded, giving a most interesting texture and looking quite beautiful.

Cape Town he associated with wine, fruit, and a wonderful climate. The wine was extraordinarily good when drunk on the spot. Many wines did not travel well, like those of Vouvray in France, and many of the 'wine farms' (as they were called in

South Africa) produced beautiful wines for drinking on the spot. The wine cellar which he illustrated was a beautiful building, observing all the principles of architecture, and, with its white walls, could in the hands of a modern architect of conviction lead to an indigenous architecture which would fit into the landscape and be terrific. The house itself was also delightful, and was representative of many others which gave a feeling of quietness and gentleness which it was very difficult to match elsewhere in Africa. Another delightful building which he illustrated looked like a church, but was in fact a powder magazine. Some of the



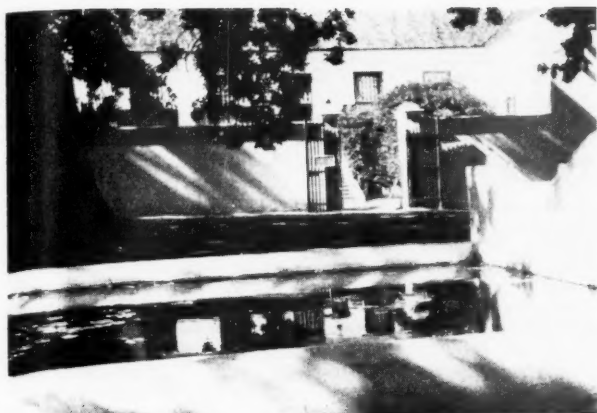
The place which spoke with the voice of thunder

Enormous rocks of the most fantastic shapes



Dumps of waste material from the mines





A feeling of quietness and gentleness



Church-like powder magazine



Some of the finest cave drawings in the world

churches which he had been doing had been likened to fire stations, but here was a powder magazine which looked like a church.

Of other works of man, one of the most imaginative was Kariba. Here a great artificial lake, about the size of Wales, would serve a large part of the country not only with water, through the Zambesi, but also with power. With its enormous dam, the works of architects seemed puny by comparison. The dam was a solid mass of concrete, with no reinforcement, but the shuttering produced streaks on the surface which he found very attractive. He had asked his Italian guide about the animals which would be drowned by the formation of the lake, and had been told 'We are engineers; we are not concerned with animals.' It seemed inevitable that vast

numbers must be drowned. The fantastic size and strength of the engineering works seemed absolutely in scale with the landscape and seemed to spring from the soil of Africa, a principle which might be applied to much modern architecture and had been very successful in modern Cape Dutch.

Zimbabwe showed what could be done in the African landscape, because here was a concentration of works which went back 2,000 years or more—it was impossible to date it. He had seen it in the rain, which had brought out the mysterious quality which was found at Delphi. There was hardly a straight line in any of the buildings. The fusion of the works of nature and of man had a stupendous effect. The purpose of the buildings was unknown. At the top of the hill was the building known as the 'Acropolis', in which was the 'cave of the

rainmaker' where fabulous rites and sacrifices must have been performed.

VOTE OF THANKS

Mr. Ove Arup, who proposed a vote of thanks to the President, said he had been delighted to accept the invitation to do so; having been a witness to a part of the Spence Safari in Africa, he felt he had a duty to report on what had really gone on.

Mr. Arup had happened to make his annual trip to Africa, accompanied for the first time by his wife and daughter, at the same time as the Spences, and had seen them at Nairobi, at the Victoria Falls and at Durban. He did not actually meet them, because he thought that they must be tired of meeting people, but he met a great many of the people whom they had met and who talked a great deal about them, so that he was in a good position to talk about their activities and the impact which they made.

'Activities' and 'impact' were the right words to use. He did not know who had organised the tour, but it must have been done by optimists with a great faith in human endurance, unless, indeed, the whole thing had been a cunning device, a kind of trial by ordeal, to weed out Presidents who were unable to stand the strain. He did not think that any ordinary person could emerge from it alive.

'Imagine it,' he said. 'You arrive at an airport after a tiring and perhaps bumpy journey. You are met by half-a-dozen architects and their wives. Immediately you have to engage in spirited conversation, and at the same time try to remember their names and who they are. You then attend a cocktail party as a preliminary to a bout of broadcasting and photographs. You may have to make five broadcasts in a single day. You then attend a public reception at the town hall, with the mayor, and then, after going to look at some buildings, you give an address to 500 students and do another broadcast. In the evening there is a formal dinner, with speeches, and perhaps a film of Coventry Cathedral. Next day this is repeated, with new people. After three or four days of it you are escorted to

the airport and received at the end of your journey by a fresh set of architects and their wives, all in the pink of condition. This goes on for six weeks or more, at a temperature of 80 to 100.'

Not many people could stand that sort of thing. Royalty sometimes suffered this treatment, but they had been trained to it from childhood, and for them everything was prepared, including, probably, their speeches. The President R.I.B.A. had largely to fend for himself and make up his own speeches, sometimes seven or eight a day, and new ones at the next place visited; at any rate those which Mr. Arup had heard did not seem to be the same, but to grow out of the moment. It had been a remarkable performance. At Durban in particular he thought that the end had come, because about 100 people had collected in a room facing the western sun and badly ventilated, which in a heat wave did not make for pleasant conditions. The Spences went there straight from their journey, after only ten minutes in the hotel, and the cocktail party was followed some hours later by a big formal dinner. The Spences not only survived but seemed to thrive on it and enjoy every moment of it.

The impact which they made was terrific and everybody was enthusiastic about them and about their friendliness and wit and charm. Charm was very suspect when occurring in architects, but as an ingredient in diplomacy and human relationships there was a lot to be said for it, and as the Institute's ambassadors in Africa Basil and Joan Spence did their job perfectly and delighted everybody, partly because they themselves were delighted. Their pleasure and enthusiasm were communicated to others. It was a great thing to give all the architects that the President met the feeling that they belonged to the Institute, that they were part of one family. They felt a little isolated sometimes and liked to have contacts of this kind, and that made such a journey very well worth while.

In proposing the vote of thanks Mr. Arup wished to thank the President not only for his delightful talk and his remarkable pictures but for the very good job that he had done, and not least to thank his charming wife.

Mr. George Walford (Chairman of the Quantity Surveyors' Committee, R.I.C.S.), who seconded the vote of thanks, said that while the President and Mrs. Spence had been going down Africa on behalf of the R.I.B.A., he and his wife had been going up Africa on behalf of the R.I.C.S., so that he could testify with some authority to the great success of the President's tour. Wherever Mr. Walford went in South Africa, the Rhodesias, Tanganyika, Kenya and Uganda the success of the visit of the President and Mrs. Spence had been abundantly clear and it had been obvious that the President's influence on the architectural profession in Africa would be lasting.

The President had made light of his journey, but his tireless interest had been amazing. He had travelled about 20,000

miles in six weeks, which was equivalent to going from London to Edinburgh every day, seven days a week, for six weeks.

They had had four days together in Johannesburg for the opening of their new joint headquarters building. That had been the occasion for a succession of parties and an official lunch which started at 12.40, and he and Mr. Spence replied for the guests at 3.40. 'I was a little disappointed,' Mr. Walford remarked, 'with your President on that occasion. I prefaced my speech with a few words in Afrikaans, which of course every erudite quantity surveyor knows, and he accused me afterwards of speaking in Latin. He prefaced his remarks with a few words in Gaelic and brought the house down, because everybody thought he was speaking Afrikaans.'

Mrs. Spence had been superb. She had never appeared to be too tired, never

uninterested, never at a loss to do all she could to ensure the success of the President's visit. His last sight of their party had been at Durban, in the room which Mr. Arup had described, with a temperature of 92 and a humidity of 97. The President and Mrs. Spence appeared to be enjoying themselves and his old friend Bill Spragg looked like a Red Indian and had, for some reason best known to himself, a toy giraffe sticking out of his pocket. Thereafter their party had gone on to West Africa, where he understood that their success had been equally great. It had been a most successful safari, and the Institute must be grateful to the President for what he had done for the architectural profession in the continent of Africa.

The vote of thanks was carried by acclamation.

The Singapore Index'

A Climatic Index for Personal Comfort in Low Latitudes

by C. G. Webb, B.Sc., F.Inst.P., F.R.Met.S.

In this article the occurrence of thermal discomfort in an equatorial climate is outlined, to introduce the idea of the Singapore Index. The formula for the index is followed by instructions for, and examples of, its use. The optimum value of the index for adult males in Singapore is described with certain of the implications of the comfort graph, which is illustrated.

Thermal Comfort near the Equator

The vicinity of the equator is by general agreement an uncomfortable place, thermally speaking, by reason not only of the heat but of the humidity and of the absence of cooling breezes. The discomfort is felt generally, but in different ways by different people. From this point of view people in these climates may be separated into two categories: the newly arrived and therefore unacclimatised; and those long resident in such climates, and so fully acclimatised. In the former category are found travellers, especially air passengers, persons arriving on transfer from duties in a cooler place, and those returning from leave or a holiday abroad or at a hill station. Their first 24 hours in an equatorial climate are most uncomfortable, and the first week is often quite unpleasant; but after a few weeks they are reasonably well acclimatised and join the second category.

It might at first sight appear that those in the fully acclimatised category would feel little or no thermal discomfort. This, however, is not the case. Although they may be perfectly acclimatised to the average

climate of the place they still have to cope with the hour-by-hour variations (the annual variation is usually slight, or anyway so slow that it merely causes a new acclimatisation); or with the differences in climate between one building, or situation, and another. For them discomfort is due almost as often to cold as to warmth, whereas the newly arrived feel always warm. Discomfort of one kind or the other is widespread amongst the resident population, and may in some cases be severe.

Different individuals, even when similarly acclimatised, have noticeably different thermal requirements for comfort, and the light clothing which is appropriate for low latitudes provides little scope for allowing for these differences, any more than it does for adjusting to the local and short period extremes of climate which were previously mentioned. It is due to this individual variation that there is often little agreement as to whether the climate in a given place is comfortable, and that it does not appear to be possible to find a single climate which will at the same time suit everybody.

The Singapore Index

The air temperature powerfully affects thermal comfort, but its variations do not tell the whole story. The main factors which are involved are well known, and in fact they were listed by Hippocrates in 400 B.C., in his book *On Airs, Waters and Places*, as temperature, humidity, wind and radiation. All these factors must be taken into the account if we want a really useful scale of climate, but it helps at the start if we make use of the fact that there is very little radiation present in a properly designed

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| Description of air movement | Range of air speeds (feet per minute) | Value of $\frac{1}{2}\sqrt{\text{air speed}}$ term ($^{\circ}\text{F}$) |
|-------------------------------------|--|--|
| Exceptionally stagnant | 0-5 | 0 |
| Still, no fan | 5-35 | 1 |
| Slight, remote from moderate fan .. | 35-100 | 2 |
| Moderate, near moderate fan | 100-200 | 3 |
| Brisk, close to strong fan | 200-325 | 4 |
| Strong, uncommon indoors | 325-500 | 5 |

building in a low latitude. If we do this we may confine our attention to the three remaining factors: temperature (of air and walls), humidity and air movement.

The three factors need to be combined in a suitable way, and this can be done by means of the formula for the *Singapore Scale* of climate,² in which the climate is represented by the temperature of still air saturated with moisture, that produces the same feeling of comfort or discomfort in human beings who are lightly active. The value of this temperature, i.e. the *Singapore Index*, is given in degrees Fahrenheit by the formula:

Singapore Index = average of the dry- and the wet-bulb temperatures
 $-\frac{1}{2}\sqrt{\text{air speed in ft./min.}}$

If one prefers to work in the Centigrade scale and centimetres per second then only one-fifth of the square root of the air speed is required for the second term in the formula, instead of one-quarter.

This is a fairly easy formula to use, but it does require some measurements. The whirling psychrometer gives good values of the dry and the wet bulb temperatures, and the katab thermometer a satisfactory value for the air speed. Or the air speed can often be estimated with sufficient accuracy by watching some cigarette smoke, or by judging, after a little practice, the feel of

the air on the face; the table above may be of some assistance in doing this.

The value of the Singapore Index can easily be calculated when the two temperatures and the air speed are known. For instance, on one afternoon in Singapore, the dry-bulb temperature was 85.1°F , the wet-bulb 80.0°F , and the air speed was 20 ft./min. Averaging the temperatures we obtain 82.55°F . The air speed term is 1.12, and subtracting this from the average temperature we obtain 81.43°F , which, as we need only an approximate figure, may be taken as 81.5°F .

On another occasion, in the early morning, the temperatures were $\text{DB} = 79.8^{\circ}\text{F}$ and $\text{WB} = 74.85^{\circ}\text{F}$ with an air speed of 10 ft./min. The value of the Singapore Index was $\frac{1}{2}(79.8 + 74.85) - 0.79 = 77.38 - 0.79 = 76.59^{\circ}\text{F}$, which may be taken as 76.5°F .

It is clear that a variety of values of the separate terms may lead to the same value of the index, a high dry-bulb temperature being balanced by a low wet-bulb temperature, or by a high air speed.

The optimum value of the Singapore Index

The optimum value of the Singapore Index will be different for unacclimatised and for acclimatised people, and for people living under different conditions of diet, activity, dress or social customs, but (rather surprisingly) probably not for different races. For fully acclimatised adult males under informal conditions, when lightly active, it was found in 1949-50 to be nearly

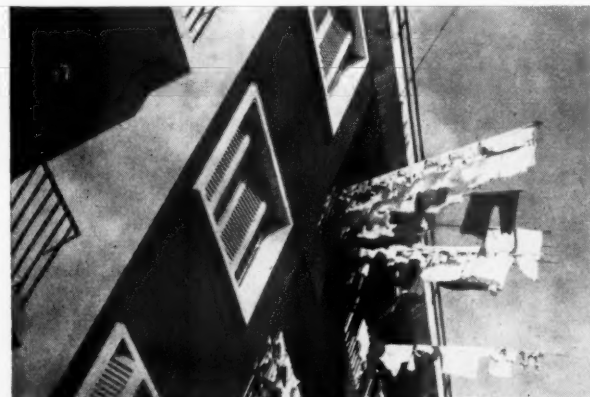
79°F . Examples of optimum climates of common occurrence, in terms of the air temperature, the relative humidity and the air speed, are 82°F , 90 per cent and 60 ft./min.; or 84°F , 80 per cent and 105 ft./min.; or again 83°F , 75 per cent and 10 ft./min. These would be felt as very warm by the unacclimatised, but not by those acclimatised to low latitudes.

Individual differences were found to be very appreciable, and even at the optimum only two-thirds of the subjects were in fact comfortable. Nor does it seem possible for individual requirements to be satisfied unless a 'spread' of climate is provided, and people are allowed to suit themselves, for instance by sitting closer to, or further from, a fan, window, or a conditioned-air outlet as they may wish. The spread of climate should not be too extreme, and about 2°F on each side of the optimum seems to be wide enough to suit nearly everybody.

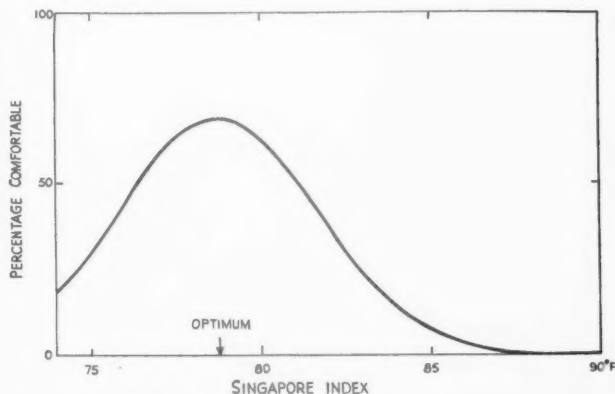
It is necessary for comfort that the optimum should be achieved with some precision, since there does not appear to be any very wide comfort zone for lightly clad people who are used to a low latitude climate. A deviation of 1°F from optimum may not matter very much, but 2° is quite serious, producing discomfort in about 20 per cent of the number who were previously comfortable.

These features may be seen by inspecting the comfort graph below. The comfort graph shows the relationship between the percentage of fully acclimatised adult males who are comfortable, and the value of the Singapore Index. The position of the maximum is at 78.7°F on the Singapore Index, and it will be noticed that only 68 per cent of the subjects at most were comfortable. The peak is not only lower, but also sharper than that obtained by similar methods in higher latitudes.

The need for warmth, for a fairly exactly defined optimum climate, and for freedom of choice to suit individual tastes, are matters that should not be ignored in low latitudes, as too often through misunderstanding they are.

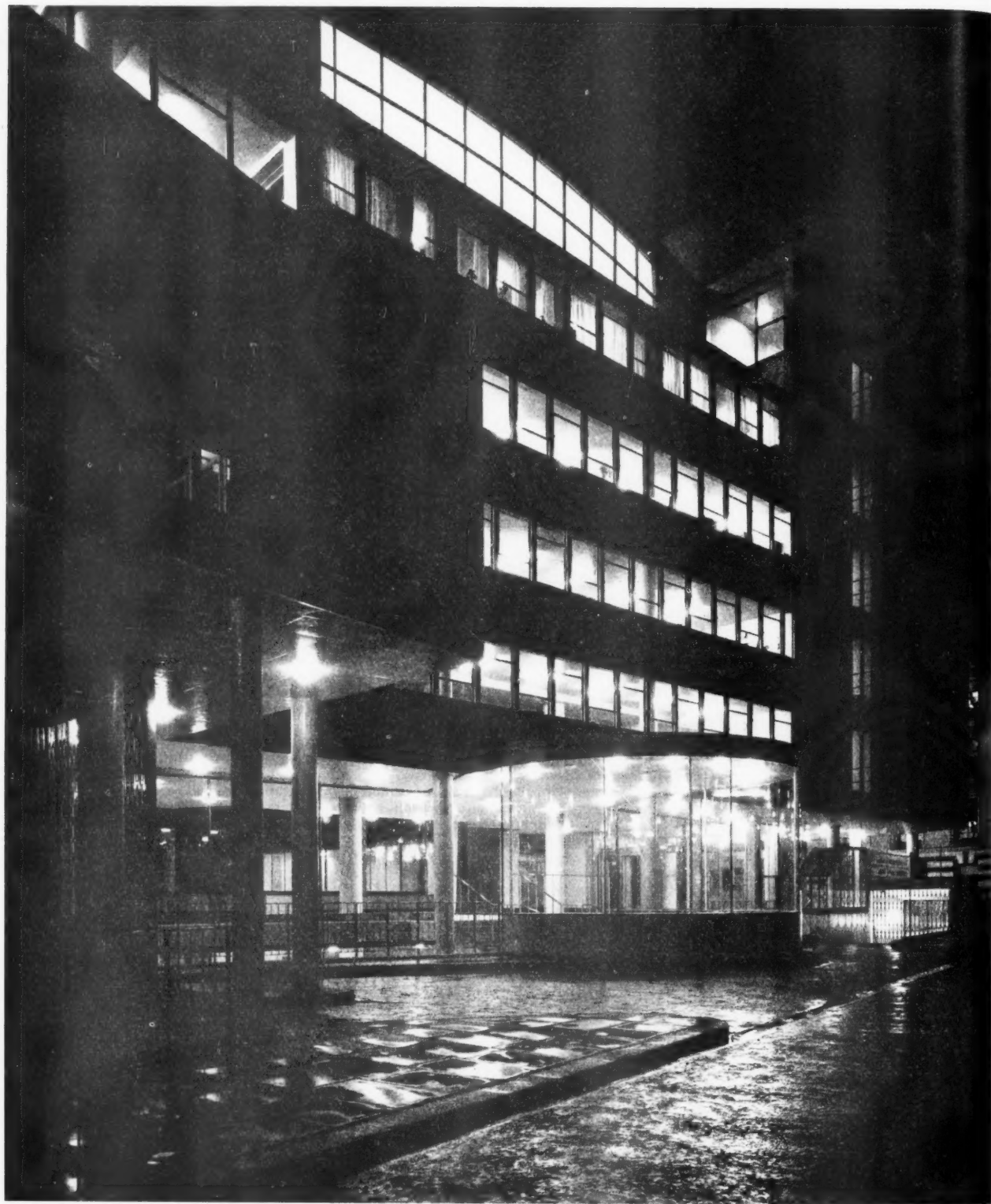


'Warm, damp and windless'



Comfort graph for fully acclimatised adult males, lightly active, under ordinary informal living conditions in the climate of Singapore. The percentage of subjects who were comfortable is plotted against the value of the Singapore Index.

² Webb, C. G. (1959), 'An analysis of some observations of thermal comfort in an equatorial climate', *BRITISH JOURNAL OF INDUSTRIAL MEDICINE*—16 (3).



The T.U.C. Memorial building, architect, David du R. Aberdeen [F], which was awarded the London Architecture Bronze Medal for 1958; view from Dyott Street



The T.U.C. Memorial building, main entrance in Great Russell Street. The bronze group is by Bernard Meadows. (Photo: David du R. Aberdeen)

The Riley Technical High School, Kingston upon Hull

Andrew Rankine, O.B.E. [A], City Architect

THIS BUILDING was awarded the R.I.B.A. Architecture Bronze Medal for the three-year period ending 31 December 1958, in the area of the York and East Yorkshire Architectural Society.

The site is in close proximity to the western approach road to the city and occupies an area of approximately 18 acres.

The greater part of the grounds has been allocated for athletic and recreational training. Areas immediately adjacent to the main entrance and the north-east side of the school are reserved for gardens with a tree belt of specimen trees and flowering shrubs on the north-eastern boundary.

The school building is planned in four main sections comprising: (a) main entrance and administration, (b) dining and services, (c) classrooms, (d) workshops; and in a manner to obtain the maximum benefit of daylight and sited to permit of the maximum playing field area.

Construction: The whole of the building, supported on piles, has a reinforced concrete framework with reinforced concrete floors and roofs. External walls at ground-floor level are faced with buff coloured hand-made facing bricks with natural stone dressings and panels of random uncoursed rubble walling of natural Yorkshire sandstone in various colours. The exposed reinforced concrete framework is faced with white cement. The upper floors of the classroom block are faced with aluminium 'curtain wall' cladding containing clear glass above window sill levels and opaque, double sealed coloured glass below.

Heating is by low pressure hot water served from solid fuel boilers, and fitted with automatic stokers, the whole installation being thermostatically controlled.

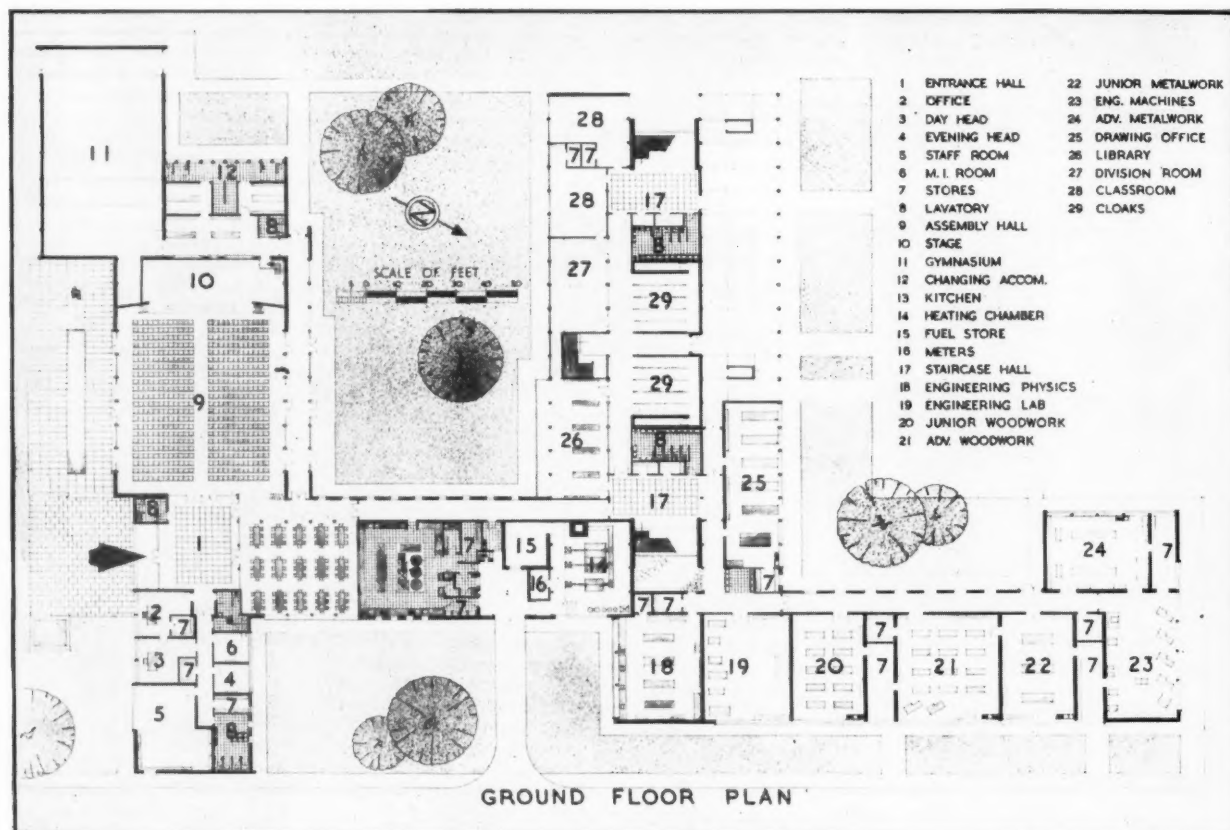
The school is wired throughout for radio services; there is provision for television in the music and drama room.

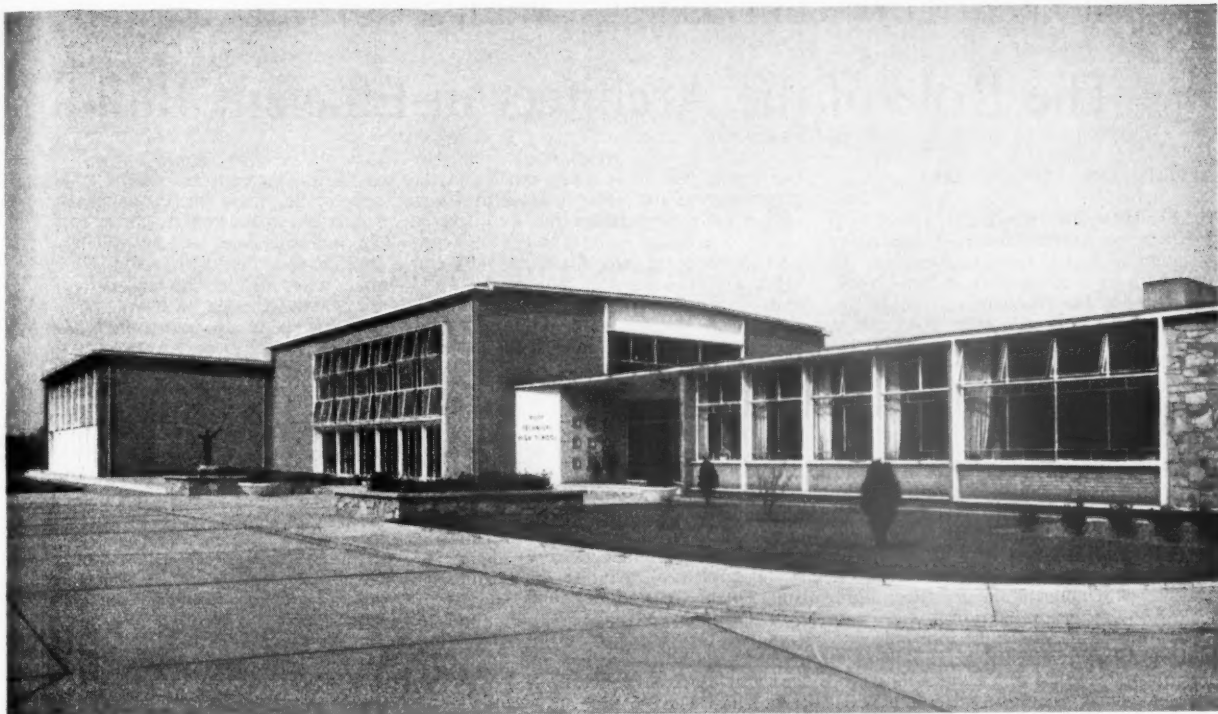
Extensive use has been made wherever possible of natural materials for colour and decoration.

In the circulation areas, however, and particularly in the entrance hall and dining hall, a much bolder and more vigorous choice of colours has been adopted.

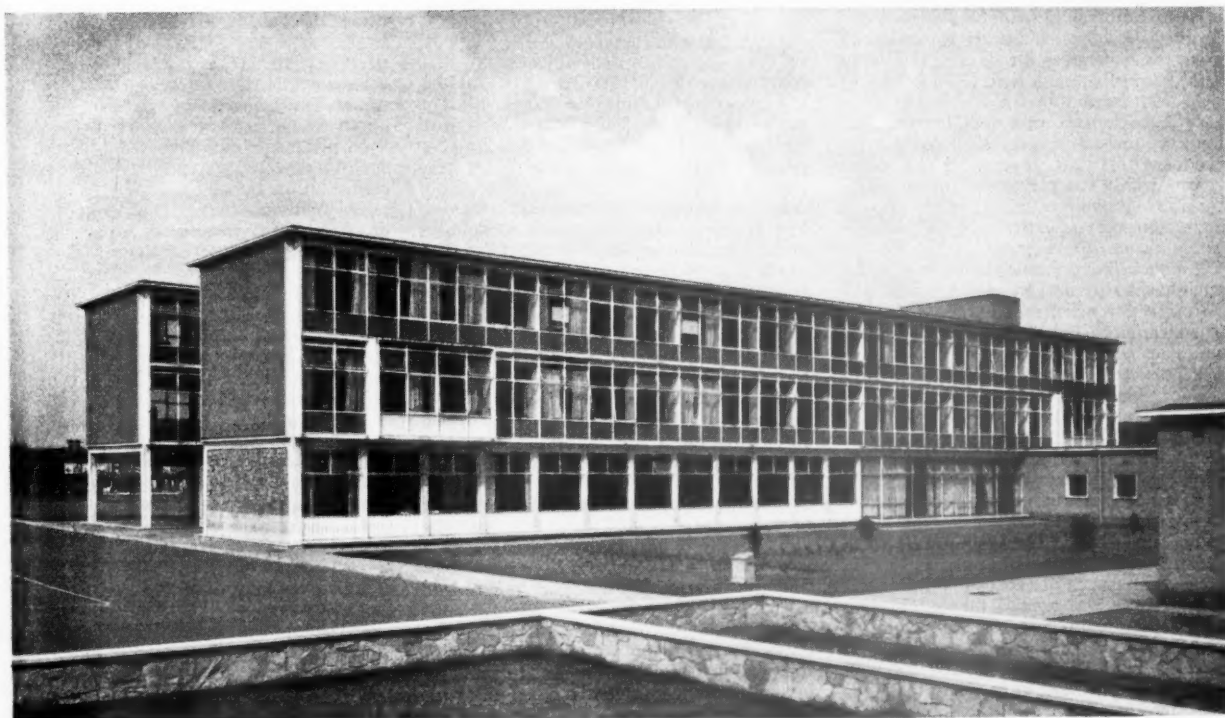
| | |
|----------------------------|------------------|
| Cost | £213,480 net |
| | £230,705 gross |
| Time of building | 2½ years |
| Number of pupils | 660 |
| Area per place | 73.3 square feet |
| Cost per place | £260 |
| Cost per square foot | £3 10s. |

General Contractors: Messrs. Robinson and Sawdon Limited, Kingston upon Hull.





Top picture: The main entrance flanked by the assembly hall, gymnasium and administration offices.
Below: The dual three-storey classroom block. In planning this block the use of corridors has been reduced to a minimum, three staircases giving ready circulation to the classrooms, laboratories, etc.



The Role of the Architect in Efficient Building

DISCUSSION: SECOND DAY

The President: Before we start the discussion this morning I should like to welcome our delegates and visitors from overseas. We have with us a delegate from New York, Mr. Aronin; Mr. Snodgrass, from Johannesburg, to whom I extend a special welcome; and Mr. Zettel, from Brazil.

Mr. Aronin has some messages for us at this Conference from our confederates in New York, and I now invite him to deliver them.

Mr. Jeffrey E. Aronin [A]: It is a very great pleasure for me to bring to the R.I.B.A. and the South Wales Institute of Architects letters of hearty greetings from the American Institute of Architects, the New York Chapter of the American Institute of Architects and the New York Society of Architects.

I am most interested in the fortunate title of this Conference—'Efficiency'—and I am glad that it has not been labelled 'Inefficiency'. I have come to learn something about what makes a British architect so efficient. I hope there will be some opinions forthcoming on the feasibility and preparation of a check list by which architects can know at all stages of their work that they have included all the elements in the design necessary for the construction of a building. In the United States we do not have any way of knowing, except by intuition and experience, whether we have taken everything into account.

In this connection I might commend to your attention the new building products registry service which the A.I.A. has produced this year. It provides one in one volume with the claims of many manufacturers as well as past performance in materials and the experience of hundreds of architects.

I should like to thank you once more for your hospitality and end my remarks with a bit of Welsh which I hope you will be able to understand—*Cymry am byth!*

The President: Yesterday the Study Group met for three-quarters of an hour to consider how we might best arrange today's discussion in the light of what had been said at the opening session yesterday morning. We did not wish to leave out anything important, but it was apparently evident that there were some particular matters which required attention. For example, differences between official and private offices hold far less interest than differences due to the size of offices. It was agreed that while their problems were much the same the solution often had to be different. The small office specially needed discussion, for its difficulties are acute, and we have a great many such offices through which a large part of

our public contact is made. In all this the emphasis was put upon internal problems with a strong suggestion that we might be under 'overheading', but the profession as a whole has some general external problems especially relative to consultants and specialist contractors. How much specialist technology should we logically do ourselves? Are our arrangements for fees and co-ordination very satisfactory? Are we getting what we need from the specialist consultants, and are we making our needs clear enough to them?

However, I am going to suggest that we should divide up our discussion, and I think we might do it in three main parts: first talking about the small office, then the large office and finally the external problems relating broadly to specialists and specialist contractors but including any points we might want to discuss about the general contractor. We have, however, held a complete conference about this last matter, and we should try to keep in mind, therefore, our special objective on this occasion, which is to look at our own efficiency. I think it will help if we keep to these categories, and therefore there will be no objection to people speaking in the different discussions.

I will ask Mr. Wright to open the discussion on the small office.

The Small Office

Mr. Arthur F. S. Wright [F] (Gauldie, Hardie, Wright and Needham): Matters concerning the small office have been dealt with in very considerable degree in the papers on management, of which you have copies. One item which has been rather skimmed through is the detailed treatment of instructions to specialists and consultants and the detailed use of present-day developments in commercial drawing offices.

At the beginning of any big job, immediately after briefing, it becomes apparent which consultant services will be required, which advice will be needed and very shortly thereafter which specialist services are really needed. At this stage it is important to remember that a consultant can and should advise and that a specialist very often has something to sell. We make a selection of these personnel by some means or other, and invite a consultant to attend for interview after we have sent him a copy of the sketch plans, and thereafter we interrogate him very seriously in an attempt to assess quality. At that stage he will give some idea of how he proposes to handle the problem given to him, and then the point arises whether the design will have to be altered—whether the consultant will have to change his mind or whether we must get another consultant.

At the same time, we have sent out general inquiries to those branches of specialists which look as if they can satisfy the demands, and we use a check list so that the specialists will provide the answers that we need and not the answers which they think we ought to have.

In order to speed up this matter of inquiry, we use true-to-scale transparencies of our arrangement drawings, which are generally small-scale ones. This means that we get drawings back which are familiar to everyone in the office. They have been made by the staff. They are the right size. The consultant has not had as much drawing to do, nor has the specialist, and we have overlays which can be used both for making fresh transparencies for the main contractor and for making copies for general use. These transparencies cost about 1s. or 2s. depending on the quality required.

After drawings have gone to the quantity surveyor, we get, from a commercial drawing office, photo-reduced foolscap copies of all pertinent drawings, which go out with the bills of quantities. For matters like electrical work where the detail of the drawing is not of any great importance but the layout and general picture of the building is enormously important these drawings are particularly satisfactory. We developed them in the first place so as to make supervision a rather more accurate business and avoid our having to be forced to rely on memory aids for checking details requiring attention after we get back to the office. The originals of foolscap size cost about 5s. 6d. each. Thereafter in the office itself prints can be made costing about 4d. each. I cannot over-emphasise the value of these reductions.

We find that this drill produces results in savings of time and has a side effect of greater importance. It imposes on everyone concerned the authority of the architect. It means that from our arrangement drawings we get a comprehensive guide-print—the print referred to on page 17 of the articles. It is the office record for the job.

It is the plan which points out all the little places in the building where the work of the consultants, the specialists and all other contractors joins together and where all these nasty little complexes occur like pipes passing through ceilings, round about beams and back out through the wall to reach the drain. You are all well acquainted with these awkwardnesses, sometimes due to lack of foresight on the part of the architect, sometimes due to inevitability in that everything has gone too far before the supervisor can catch the defect, and sometimes due to direct disobedience on the part of the operative or adviser concerned.

We are aware that much of the results of this work, the savings of time and the

co-ordination of special details, can well be achieved by a good general contractor. Until good contractors are more numerous, however, the architect will have to look after these matters himself if his buildings are not to suffer.

The President: I wonder whether I should invite Mr. Keith Scott to say something about the small office.

Mr. Keith Scott [A] (Grenfell Baines and Hargreaves): I had intended to speak later on about the large office. Perhaps I might ask for a definition. We have 18 people in our Preston office, and we have an organisation which tries to fit that.

The President: To some people that might be a small office.

Mr. Scott: Very well. I have been very interested in the papers that have been produced prior to the Conference, and I hope that something will come out of the Conference whereby the whole profession will have something further to go at.

In particular, I should like more details of the type drawings mentioned by Gauldie and Wright. We have had great difficulty in trying to get at any good type details. We find that it needs the labours of a partner working at a great stretch for long periods of time, and this we find very difficult to achieve. I should be very interested to know, for instance, whether they have any further type details on the doors or windows mentioned in their articles. We fully agree that type details of verge and eaves details and chimney caps do nothing but stultify the design.

In source details we get a little further, and we are sure that source details should be classified under their elements so that we can relate it back to a costing system that we have in the office whereby these source details can also be priced.

There is the question of the catalogues still needed for general type information. We feel that we have a very good system for our type and size of office. We differ radically from Gauldie and Wright here. We have what is in effect a librarian. We have 18 qualified architects in the Preston office and a further 14 in the branch offices. We have a librarian, and he is in charge of our whole library system. We file strictly under the A.J. system, and each file is indexed under the name and cross-indexed under the ARCHITECTS' JOURNAL subject. This works very well. We have an intercommunication system in the office whereby we ring the librarian, and within seconds the catalogue is on the desk. I can assure you that the system works. The librarian books the catalogue out to one just like a librarian in a normal library would register books out, and every few days one gets a form reminding one that the catalogue is still out.

After three years the library has more than 6,000 catalogues covering 2,500 manufacturers, and there is a roomful of samples—about 1,500. It really pays off in terms of time.

We feel that this could work also in local authorities. I have worked for local authorities where there was the problem of the catalogue being left on draughtsmen's desks and lost for all time. I also see no reason why the system cannot work in a small office. I was the associate in charge of our Manchester office, a small office with four assistants, for some time, and we worked the same system there, the secretary doing the librarian's work. The library was used full time.

With regard to the programming of work, I should like to know whether Gauldie and Wright find that the method which they have outlined is fully satisfactory. We have tried it and found that it was not. We have been trying to forecast time and labour availability in the office more accurately. We have had graphs showing the number of man-hours available in terms of building work per man-hour in relation to staff time. This is kept up to date for every phase in the job so that we can see what profit or loss a job is making at any given point in its career by reference to a target line already on the graph, and we can see from the graphs, by making a comparison, what the total man-hour availability of the office is likely to be at any given point in the future. This is of great assistance to us, although I must say that, whereas we have the first point lined up very well and the method is working accurately, we have found that in regard to the second total we have some difficulty due to the number of variables.

We recall how long working drawings take to produce both in terms of skill and in terms of individuals. From this we can determine, and are hoping to determine increasingly accurately, how long the working drawings should take, an estimate of the number of working drawings for the job—you can do that quite accurately, certainly there is a 10 per cent margin of error, but I think we can do it within 5 per cent—and how long the whole batch of working drawings will take with various team combinations. Obviously a very experienced three-man team will do a job very much quicker than one very experienced man with four or five graduates, because the experienced man will probably take some time prompting the other members of the team to solve problems.

But how long? These are the questions that we are trying to answer.

The President: Although we are inviting people to talk about the small office, that is no reflection on their own organisation, which may be large. I know that I probably and some other people have a small office when it is compared with American standards, but maybe it is a large office compared with our own standards. I can speak eloquently about the small office and the problems which confront it. What we are looking for is people with experience to help us with the problem of efficiency in the small office.

Perhaps Mr. Handisyde would care to speak.

Mr. C. C. Handisyde [A] (Handisyde and Taylor): I said yesterday that I thought that there was a tendency perhaps for conferences to talk a little too much about the big office, and that the small office was terribly important to architecture in general in its effect on the public.

I should like it if through the Institute we could collect together a lot of information of the sort which Mr. Scott has given and build up a yardstick by which those offices which are interested in improving their efficiency could measure whether they are efficient or not.

For instance, there is the question of how many man-hours it takes to do different jobs. We keep some records of that kind in our office, but the amount of work which a small office does is so little that unless it can compare its results with those of somebody else it does not help very much to keep the records. It may help a little in planning how long the next job will take, but with so little build-up of information it is not nearly as helpful as it could be if there was some kind of general clearing house through the R.I.B.A.

Another point made at yesterday's lunch-time meeting related to the importance of overheads, and I agree with the opinions which were expressed there, that on the whole a small office with its eye on buying the baby a new frock all the time is a little inclined to cut its overheads to such an extent that it becomes uneconomical. The less you are prepared to spend on it the less efficient it becomes. It would be good to get some kind of data on what small offices should spend in the way of overheads.

Mr. Peter B. Dunham [F] (Peter Dunham, Widdup and Harrison): My office has a technical staff, including the three partners, which varies at the moment from between eight and fifteen. It started as a one-man show about 20 years ago. Therefore, I have experience of the various stages up to that size.

The main difficulty about a small office is the relatively large number of small jobs it has compared with the relatively small number of very large jobs in a large office. It is this complexity of a small office which makes it so difficult to run it with medium efficiency. We are always worried about the efficiency of our office, but we have come to the conclusion that we—I think it probably applies to most offices—should make much more use of the non-technical staff. I think we are improving a bit.

I suspect that in the large offices there are too many technical staff wasting their time on doing administrative jobs which I am sure the secretaries could do, and something of the same sort happens in small offices. In fact, I feel that in a small office you can, if you do not look out, spend so much time evolving wonderful routine and complicated systems that in the end you have no time to do any architecture at all. It is a tragedy of our time in many ways that the higher up the ladder you get in this profession and the more work you get, the less time is available for the principals or the group

leaders to actually do the architecture, the designing is delegated, and the principal gets bogged down in all sorts of routine matters.

We believe that a wider and more intelligent use of the secretarial staff of a small office could provide the answer to many of these problems.

First of all, there is the selection of the secretary. Like many things in life, the cheapest is not always the best. This applies to girl secretaries as much as to anything else. There is a tendency in the small office to cut down the quality and number of the secretarial staff so that another architectural assistant can be afforded. It is fatal to do so. When you are selecting a secretary, it is essential that she should be intelligent and attractive. We spend a lot of time selecting our light fittings, furnishings and fittings for the building, and there is no reason at all why we should not have a well-designed secretary. Clients who come in are just as much impressed by an attractive and efficient secretary probably as they are by the architect who eventually sees them.

We have found that the intelligent girl can take care of much of the routine work normally done by the partner or the chief assistant, and can take considerable responsibility if she is encouraged to do so. She must be treated and trained differently from the accepted machine which just produces the letters. She must, in fact, share in the architecture and know as much about each job as anybody else in the office. Our experience has been that with this encouragement she knows a lot more about the job than most of the architects do.

These are, I suggest, some of the things that you can do with a good secretary. She will, of course, do the normal routine duties and write routine letters off her own bat. She should sit in at most of the important interviews and discussions that either the partners or the assistants have with clients, consultants or subcontractors if they are important enough. It is far better that she should sit in and take notes than that it should go to her afterwards as a memo.

She should—we have found that this works very well—both invent and run the filing system for catalogue information, plans and so on in the office. Only two years ago we were struggling on with the box-file system for our catalogues, which got all over the office and were never in the right place. One day we asked one of the secretaries to get it organised. Within about two weeks everything was organised. I do not know what the system is, but if you ask the secretary for a certain thing it always appears very quickly. It is far better that a secretary should devise a system and run it than that one should waste one's time or the time of an architectural assistant in doing it.

In the case of the more important jobs or the most interesting ones anyway, architects should take their secretaries along with them so that they know what is going on, and the secretaries should attend the more important site meetings.

There is another use for a secretary while you are on the way to a job. If she is capable of doing it, she can take shorthand while you are going along in the car. I have found it extremely useful. However, there are three requirements: you have to have a secretary who is not subject to car sickness; you have to take anti-sea-sickness pills with you; you have to have a secretary who is willing to take the pills. I find it most useful to do this. Those interested in statistics may be interested to know that it takes about 40 miles to do a normal specification for a normal three-bedroomed house.

A secretary can run the information service and act as liaison between partners and groups in an office. This is important. We have found that even with three partners we can never get together to discuss anything. We find that we get far more information passing between ourselves if we let our secretaries do it than if we try to do it on a routine basis.

Finally, what proportion of secretaries to technical staff is necessary? I think that it is somewhere between three and four assistants to one secretary. I am not certain that it could not be even more secretaries than that.

Those are some observations on what one can do with a good secretary. I feel that there are just as many interesting possibilities in what one can do with a bad secretary.

Mr. Thomas Mitchell [4] (Thomas Mitchell and Partners): While not disagreeing with anything that Mr. Dunham has said, I would put to the Conference the point that instead of wondering whether the secretary or the technical staff should do an administrative job, it is fundamental first of all to decide whether the job is worth doing at all.

I think the most helpful approach to the problems of the small office is to get rid of unnecessary administrative work rather than to elaborate special ways of reminding you how to do it.

Mr. R. Baden Hellard [4] (Brunton, Baden Hellard and Boobyer): I speak as one coming from a small office, and I have a few statistics to offer which I hope may dispel the views of Mr. Mitchell.

Today we are dealing with a different environment from that when Mr. Mitchell was with Vincent Harris. We have many more authorities to consult, more technicalities to attend to, and much more co-ordination to do, and co-ordination is the thing which needs administration.

But I agree with Mr. Mitchell that we must first ask the purpose of administration. It is either to improve the product or to reduce the time necessary to produce it, in our case the product is a building.

I do not think we can lay down any hard and fast rules for any size of office, but I think we can take up the principles which Mr. Austin-Smith mentioned yesterday because they have applied equally to I.C.I.'s, 18,000 people at Billingham and to

their small powder mill in Cornwall with nine people. Sir Ewart Smith has a maxim—the high cost of low overheads. I am sure this applies to architects much more than Parkinson's Law does.

We have tried over six or seven years to use records not just as records but as planning documents, but we have found that they are useless unless you 'progress'. There is no use planning unless you keep check of your progress against the plan, and it is this act of checking progress that washes away all the problems of not getting a job out on time. This may be because an assistant who is aware that the job has to be finished today somehow always gets it finished today, but if 'today' is 12 or 18 months ahead it is difficult to check progress against such a time scale. It is necessary to bring the time scale down to something which the chap on the job can understand. This need not be difficult. We use squared graph paper and mark off the time allotted for every task. Sometimes it may be as little as five or six hours.

We use a series of check lists which have been adapted from simple work study practice as an approach to the problem of drawings.¹

This resulted from a method study which Mr. Austin-Smith pointed out involved five main points:

- (1) You have to select the job. We selected drawings.
- (2) You have to examine the purpose of the drawing. Here I think there is an aspect which as architects we often do not sort out in our own minds—whether the drawing is an instruction, which the contractor may only vary at his peril, or whether we are giving information and suggestions which we do not mind how the contractor carries out as long as we get the desired result. If we could clear this point and separate the two distinct aspects of instructions to contractors, it would be a big step forward in the presentation of drawings and it would help to get what we want at a price that our clients can afford.
- (3) We then devised and rationalised, and—
- (4) Installed a system—in this case a questioning systematic self-checking system. The last point—
- (5) Maintain the system. It is easy to create a system and spend time organising it, but if you do not keep going back to see that it is being used until it has become standard practice it is useless to begin. We have all met the operative who has not liked a new tool and has thrown it away after ten minutes, when he had spent five years learning to use his previous tool. We must spend longer at it. If we doubt it, let us look at the results of such firms as I.C.I. and we shall get the reassurance that we need to go on.

I have figures here to prove a lot of what I have said. I have been too long, and so I will give just one or two. We have kept records of all the time spent in the office for the last six or seven years, and we find that the average non-productive time—that

¹ See Note at the end of this report.

is time not allocated to any specific job—per month varies between 16·2 per cent and 51 per cent. However, we still seem to be able to do jobs on which other people cannot make a profit. The 51 per cent was in August when a lot of the staff were on holiday, but they still have to be paid and costed. The average for the whole of the seven years is about 20 per cent.

Mr. Bryan Westwood [F] (Westwood, Sons and Partners): For conveying information, I would put in a plea for photographs. When one is engaged in renovating old buildings there is nothing to beat photographs. We have found in renovating war-damaged property that photographs will do more in a comparatively short time than you can do in making a descriptive drawing. This method obviates the need to make sketches. The relative heights of roofs, eaves and so on are immediately conveyed even by a dreary photograph.

Mr. Kenneth W. Mark [A] (Metropolitan Borough of St. Pancras): As an assistant in a small office for some 14 years I have seen lots of different types of organisation, and I was very pleased when the Conference decided to discuss this matter. The main difficulty seems to me to be that much of our organisation ends up in chaos.

A vital point which is often missed is the relationship between the principal and the staff. If this relationship could be happier, from both sides in many cases, we should be a lot more effective and better organised. Often a lot of records which seem to be just what is needed from the practical point of view are a terrific burden on the staff, and often the staff are not granted time to keep records which they would like to keep.

I think that the secretary has a very important place in a small office; but there is always the danger that the secretary can become almost the principal, and this ought to be very carefully watched, because it can cause a lot of bad feeling and disorganisation.

Lastly, I would say that all who have taken the trouble to enter this profession—in many cases they have done so with a great deal of difficulty—must have offered to them a challenge. Their work must constantly be a challenge to them. Nobody can feel proud of something which they can do in their sleep, and often in offices after one has spent many years in studying and obtaining qualifications one finds oneself with no challenge. Also, one must have complete confidence. You must have confidence in the person for whom you are working, and you must feel that the person for whom you are working has complete confidence in you.

The President: I will now invite Mr. Gauldie to sum up this part of the discussion as briefly as possible.

Mr. W. S. Gauldie [F]: The subject of type details was mentioned by Mr. Scott. The great thing is not to start typing all sorts of various things. One should avoid having

details of eaves, verges and so forth, because one may introduce a restrictive factor in design. They are matters for source details. The fewer the type details the better, and the more flexible they are the better.

Mr. Scott's information problem seems to be different from ours. Six thousand catalogues is too many. I believe that the thing to do is to throw most of them away. We get a great deal of literature every day, and it is beyond one's ingenuity to keep track of it all. Once we have thrown two-thirds of the stuff out it is easy to file the rest, but throwing it out is the trick.

Mr. Handiside spoke about the overheads of a small office. It would be interesting to get a general opinion about that. I have seen a figure of £9 to £10 a day for an assistant. I think we ourselves should soon be out of business at that rate, although we are probably rather lavish with our overheads nevertheless.

I disagree with Mr. Dunham about non-technical staff doing things like classifying catalogues, but he made a good point about the fact that one can leave oneself no time for architecture.

I am rather with Mr. Mitchell about first asking *why* one is doing the administration, and I also agree with Mr. Baden Hellard that the sleepy days when one could do without it are gone. However, they have one point in common, and that is that the great thing is to ask why and check your own assumptions.

With regard to the question of specialists, one is apt to think that the small practice does not have so many specialist problems. On the other hand, in a very small practice one has all sorts of people like the local plumber who are specialists on the local plumbing and so on. It will help us if we put the thing in historical perspective. Once upon a time a man left a cave and built a house. He was the first architect. Another fellow dug a hole and put a rough shelter round it, and he was the first specialist. He is now called the sanitary engineer. Specialists grew as civilisation grew. Our technique must simply adapt itself to these growing problems.

The Large Office

The President: We will next deal with the large office, and I should like to invite Mr. Arthur Ling to start the ball rolling.

Mr. Arthur Ling [F] (City Architect and Planning Officer, Coventry): I am not sure that I am the right person to start the ball rolling, but I have one or two things on my mind that I should like to get off it.

The first is that I think that in the large offices we are going to be judged in the future as much by the maintenance and running costs of our buildings, as by their functional and aesthetic success.

I feel that we have to point out quite clearly from this Institute that we as architects are not responsible for inefficient design giving rise to heavy maintenance costs when the capital costs allowed for

particular buildings have been so cut by the Government that we have had to cut down on finishes and put in cheaper equipment which give rise to heavy maintenance and running costs. On the other hand I think everybody knows that the Ministry of Education will allow coal-fired boilers or oil-fired burners and the usual thing now under the Clean Air Act is to change from coal to oil, which simply means that instead of being choked you are poisoned. If you try to put electric heating in a school you are told that it is too expensive in running costs. That is a case where they are thinking about running costs, but not about the Clean Air Act, and it will be more expensive to change all this equipment over later.

The Institute should make its voice heard on the side of not cutting down on capital costs to the extent that the authorities will be incurring heavy maintenance costs and then looking to the architects for an answer instead of to those who are responsible for it. By cutting down by £300 on the capital cost of a house you will probably involve yourself in the expenditure of £1,000 on maintenance in the period ahead.

The second point upon which I want to touch which also affects the large office is the question of the 'package deal'.

The complaint that there seems to be against this service—and I think it is a proper complaint—is that the architect is at the bottom of the package. There is one way of solving the problem, and that is to turn the package over and bring it the right way up with the architect on top.

I hope that the Borough Architect of Edmonton may say something about this. For in Edmonton there has been for some time—ten years, I think—a direct works department which is organised under the Borough Architect. The architect is on top and certain economies are possible. For instance, you do not have to duplicate the quantity surveyor's services on the contractor's side. The quantity surveyor becomes the contractor's estimator. Similarly with the clerk of works and general foreman. You do not have to have one man supervising another; you combine them into one. Thus the integration of building with design work can produce interesting and economical results.

There is a third point that I wish to make, concerning the relationship between the specialist serving the large office and the architect. Some local authorities have outside private consultants. Others are served by their own staff. The electrical and heating specialists and structural engineers may be within the architect's department or in another department altogether. It is well known that most of the architects' departments with the big local authorities in this country started in the city engineers' departments, and we are only now beginning to reach the point where the large majority of local authorities have a separate architect's department. There are still 36 important county boroughs without architects' departments. When the split has taken place in the past not always have the specialist services come over with the

architect. It is most important that the little bits which have been broken off are brought together again and that one person—the architect—is made responsible for all the design processes of building, otherwise you have conflict and discord and they are reflected in the design and costs of a building.

Mr. Kenneth J. Campbell [A] (Principal Housing Architect, London County Council): In the very large office there seem to be two problems relating to efficiency. One is the problem of mechanical efficiency, which comprises all those things connected with the use of forms, filing systems, check lists, notebooks and so forth. The second problem is that of the human factor.

In the large office it is the second which is the most difficult problem. The very large office can normally dispose of librarians and others for building material research, development research and so on. One can dispose of the people, and one can produce to some extent the information, the knowledge and the research results. What is appallingly difficult is to get the material down to the chap on the board and, having got it down there, to get the chap on the board to use it quickly and efficiently and with a certain sense of co-operation.

I was extremely glad that the speaker who spoke as an assistant said the things he did. There were two or three of those things which were very pertinent.

I started in a relatively small office and went up through larger ones to my present office, and in every case I saw the difficulty and the danger of the prize confidential secretary starting as the passer-on of all the principals' ideas, opinions and instructions and ending up as the originator of those ideas, opinions and instructions. That can happen in large public offices as well as in private offices.

We produce a very large information book. It is an excellent thing. It is about the size of any one volume of the *Encyclopaedia Britannica*, and I expect that ultimately it will be about the size of all the volumes. At the moment it covers only housing, but it is a foolscap-sized volume getting on for 2 in. thick. It contains all the information which we think that everybody ought to know, from the width between balcony railings to the latest information on under-floor heating.

It is all done in a loose-leaved book with a hard cover, and all the sections, dealing, for instance, with relations with other bodies, structural problems, statutory problems and building regulations, are in different colours. Every year all the current information, notes and instructions are put into a subsidiary volume, and at the end of the year they are put into the final volume. Each section has one of these books, and anybody else who may be interested, but the difficulty is to get people to read them. This is a real difficulty. The book is handed to every chap when he first arrives, and I imagine that they read as much as they can get through. It is like reading *Mathematics for the Million*; I used to stop at

the third chapter. However, the book is there for reference.

Our real problem is: What is the final resistance point of the ordinary chap in a big office to instructions which come round in the form of paper? It is not only information but a continuous stream of instructions, notes, exhortations, reminders and so forth going out. We find that we rapidly reach the saturation point.

That leads straight to the next problem, which is the human factor. In the small office, whether one likes the boss or not—and it is almost irrelevant—one is at least in the middle of the turmoil of the practice, the tensions and the pressures day by day, and also the catastrophes. With all this going on it makes the chap feel that he is part of it. He may not like it and may get out, but he is nevertheless part of the general feeling of the office.

In the very large office this is not so. The man at the board is to some extent insulated. The difficulty, as we have found, is to maintain the sort of pressure and tension low down in the office that you get in a small office. My impression is that in the large office you can do less with the things which we have heard about this morning—forms, schedules and so forth—than you can in a small office.

Everybody knows that in every office they have ever been in, all round the walls there are pieces of faded graph paper or specially drawn diagrams with bits of cotton which hang down, dated about 5 August 1955. I have it in my office, and you have it in yours. I am not decrying these charts. I think they are absolutely essential. They look well—provided that you remember to move the cotton along. But the point is, and my experience has been, that it is not the architect's business to keep them up to date. This is where I entirely agree with Mr. Dunham and another speaker who referred to the matter of secretaries—whether they are male or female. My view is that you can use the non-technical man to much greater extent. The risk in a large office of the ordinary section clerk or administrative clerk ever becoming too much on top is almost nil. It may not be so in a small private office but it is so in a large office.

At the L.C.C. we have about one-third of the number of administrative assistants at section level that, in my opinion, we ought to have. I am convinced that at least one secretary, clerk or whatever you like to call him, to, say, one dozen men is absolutely essential. Probably that is not enough.

Not only is there all this filing, charting and recording to be done but there is also telephoning. I believe that one of the things that make promotion worth while is that you get someone to do your telephoning for you. I am serious about that. It is wrong for the average working architect or assistant to have to spend a very large portion of his time trying to get contractors, sites, subcontractors, other departments, outside consultants on the 'phone, perhaps missing them the first time and finding that they are engaged the second time and then

not being in the room when they ring back. He should be able to tell somebody to get Mr. So-and-so for him or to get Mr. So-and-so and tell him this, that, or the other. The amount of highly-paid technical time spent on that duty is far out of proportion. It is uneconomical.

Finally, everyone knows the problems in keeping in touch architecturally, mentally, morally and emotionally with the chaps in the large office. How to do it I do not know. I meet one section a month—I have 20 sections—and have a small exhibition of its work in a conference room in the office—and we have an afternoon's argument and debate on the work. That is one way of doing it. It is not really adequate, but it is one way. I should like to know how one keeps in touch with the chaps in the very large office, because in my opinion that is the secret of an architect's efficiency.

Mr. H. S. Howgrave-Graham [A] (Crawley Development Corporation): It is clear that you can use your clerical staff in a big office, if you have a good one, to do a great deal of the work on quite a number of things which in a small office are normally done by the technical staff. Having had some experience of being at the L.C.C., I would say that it is important to ensure that the clerks are given jobs which keep them interested in their work, because there is a type of clerk one meets in large offices who is browned off and does everything simply because he has to and is no longer interested at all in his work.

I should like to go a little wider within the immediate question of the large office. I feel that the subdivision of the discussion this morning into small offices and large offices makes it difficult to bring in some of the points which we all have in common, and one that I should like to mention in particular is that we all know that justice has to be done but that it has also to be seen to be done. We have been talking a lot about the efficiency of our offices from our own internal point of view, but from the point of view of the profession at large it is vitally necessary at this stage that we should be seen to be efficient.

I know from talks that I have had that there are a certain number in our profession—a small minority, I hope—who manage to convey to the outside public somehow or other that we are a lot of long-haired nitwits. I think the schools have a job here, because most of the chaps who come into the profession do not talk in exactly the same language as their clients. I have suffered from that disability because it was not part of my curriculum. You have to pick it up as you go along, and it is not easy. You are dealing with businessmen who have been trained in financial language, and they talk in a financial language, and they expect their architect to be their adviser in a much fuller sense than their design adviser. Very often they are dealing with an investment, and the outcome of the investment depends on the architect's ability to appreciate what the investment is about, and if he cannot do that he cannot give the client the fullest service. Therefore,

I ask that in educational spheres this should be looked into much more thoroughly.

There is also the question of these ideas which have come from all quarters. I find that when you have conferences you get a tremendous bombardment of ideas. Many of them seem excellent, but when you get back you find that your in-tray is full up after you have been away and soon you are back in the old routine, time passes and it is the next conference before a lot of new ideas come forward.

I suggest that the R.I.B.A. might, through the Practice Committee, examine these ideas, and perhaps then have them printed to go out to members ready for them to use. This might be done where ideas have been put forward which have been found to be in the interests of the profession as a whole.

I should now like to deal with one or two points arising from other contributions.

There was a reference by Mr. Ling to the economies which may be obtained with the direct labour scheme. I think there are grave doubts in the minds of many people whether such economies really are obtainable. There are arguments in favour of such schemes and arguments against them. They leave out the competitive element which drives many people in contracting firms to seek efficiency in their organisation, and it seems that that is the greatest drive towards efficiency.

There was a reference yesterday to the fixed price tender. I think we all hope that the fixed price tender has come to stay. There is one aspect of that which Sir Thomas Bennett, who is unable to be here this morning, hoped I might have an opportunity of putting forward. It is that fixed price tendering arrangements between the employers and the employees in the building industry are for their settlement on merits. The moment you have labour on fluctuation there is no longer any very strong incentive on the part of the employers to resist requests for increases in pay, for the operatives say "What have you to worry about? You will get it all back anyway". That is a point to bear in mind.

I will confine myself to one more remark. I wonder whether it is possible for the building industry to organise something like a consumer research panel such as has proved valuable to housewives and others. I can get a little paper which tells me how Messrs. Woolworth's paints compare with somebody else's, but I cannot get a similar paper which gives me equally valid information about the paints normally used by our profession.

I congratulate Mr. Peter Dunham upon his very efficient secretary, but after what he has said this morning I wonder whether he will have her very much longer.

Mr. F. R. Steele [F] (County Architect, West Sussex): I speak from the point of view of the medium-sized county office with 30 architects, or people approaching being architects, and 30 or 40 technicians and clerks.

My experience is that there is probably

more danger in over-organisation than in under-organisation. Over-organisation—too much filling in of forms, too much unnecessary analysis—can waste more time than it can ever gain, and it can take the architects away from their architecture and kill their enthusiasm.

I have tried in my office to bring this business of organisation to within reasonable limits. In common with all county offices, I have a great deal of change of staff, and I give each new member of the staff a booklet of 30 or 40 pages, and periodically—and as seldom as possible—I send out administrative and constructional memoranda. In these we give details of new materials and point out the little mistakes which we occasionally make in order to ensure that they are not repeated by other sections.

That is about all I do in the way of organisation. I am rather appalled to think of an office about the size of mine keeping a librarian to look after catalogues. I should soon be on the dole if I tried to do that.

There are two particular checks which I have used and have found most useful. I like to know that each assistant is producing about £40,000 worth of work a year—a little less if it is a big, complicated job or a little more if it is a simple job—and I like every month to see a balance sheet for all my contracts.

The President: I will now ask Mr. Sheppard Fidler to sum up on the question of the large office.

Mr. A. G. Sheppard Fidler (Vice-President): Mr. Ling started off with an interesting point about the maintenance of buildings. I do not know that it directly related to the large office or the small office, but I agree with him that it is an enormously important point. I think that the moral that we might draw from it is that we should as architects look out for opportunities of pointing out, particularly to members of local authorities and Government departments that we have been designing buildings on a very tight purse-string since the war, not only in relation to materials themselves but in structural techniques and also in space standards for buildings. The size of living rooms and bedrooms seems to fluctuate according to our national purse, not because of any specific health reasons. There will be an opportunity for architects to put forward quite strong views of their own, on housing particularly, when the Central Housing Advisory Committee sub-committee on standards gets to work.

Frankly, I had not thought of the use of direct labour schemes as an answer to the all-in service. I feel that the N.F.B.T.E. and others may have different views about its efficacy in that direction, but it is an interesting idea, and it brings the architect to the top of the package, as Mr. Ling said.

I was most interested, as I am sure you all were, in what Mr. Campbell had to say about the L.C.C.'s famous handbook and the difficulties that the assistant has in digesting its contents.

There is a distinct problem in the larger

office in this matter of the dissemination of information. It is difficult to keep one portion of the office aware of what another section is doing. One needs a good organisation to cover that sort of operation.

In my office we try to keep people informed of what is going on by means of meetings and office instructions, which are kept to the minimum. I have a central library with a librarian for technical information. He will carry out a certain amount of limited research, but technical information sheets, catalogues and so on I put with each group.

I support Mr. Howgrave-Graham in what he says, that you should use your clerks and secretaries to the greatest advantage. He stated that architects should appear to be efficient. That is support for what I said in the very first paragraphs of my introductory paper. I believe that architects ought to be businessmen. They ought to look like businessmen, they ought to speak like businessmen, dealing with businessmen businesswise as the Americans say.

One cannot help agreeing with Mr. Steele about the dangers of over-organisation and over-management, but I do not think the prime purpose of this Conference was to make everyone rush home and set up a work study group in their office, because there would not be many buildings produced in the next twelve months. The thing to do is to arouse an interest in the subject. Some people are doing it. If we can get the results of their work published in the way the papers produced by Mr. Gauldie and Mr. Wright have appeared it would be a good thing. Perhaps they need not be quite as full now that the subject has been introduced, but we want to share this information among ourselves very much more than we are doing at the moment. The contributions that we have had this morning show that a number of people are doing quite interesting things in their own offices if only we can get to know about them.

I have one further remark to make about something I have in my own office which I have found very useful. It is a fairly large office, and therefore we have a considerable turnover in staff. That is always a difficulty because when something arises after a few years you find that the assistant that you want has disappeared. When a job is finished we write up a history of the contract. We describe what happened as well as giving general information about who the contractor was, what the weather was and so forth. We write up the history of the thing—why the building was designed in the special way it was, what particular problems had to be solved and how they were solved, why certain materials were used, what went wrong, and so on—so that the knowledge can be passed on to others and the basis of research is established, particularly where it is an unusual sort of building.

I believe very much in the use of non-technical staff to support and help the qualified architect as much as possible, as I have said, in order to give the qualified

architect a job for which he is really qualified and which he enjoys doing, which is designing buildings.

Consultants and Specialists

The President: It is now time to begin discussion of the next point, which arises quite naturally, and that is the question of the external problems relating broadly to specialists and specialist contractors. Also tied up with this would be the problem of the general contractor. I ask Mr. Baxter, architect to a county borough, to begin the discussion.

Mr. K. Martin Baxter [A] (Borough Architect, Bolton): We have been discussing the question of efficiency within large and small offices. We should also consider the impact which our efficiency makes on the general public. There seem to be three main criticisms—first of all the question of maintenance; secondly imposition of outside control, such as arbitrary 'cost per place' regulations; and lastly the function of the architect in regard to speculative development.

Architects are often criticised by their employers—public authorities as well as private clients—because their responsibility is at an end once the maintenance period of a contract is over. Could not a revision of the scale of fees be made, so that it is optional to the client, that the period of responsibility could be extended over a period to cover several years? This could be linked to the latent defects period, and would encourage architects to give more detailed consideration to the long term effects of specifying certain materials and guarantees; type of lighting and heating systems; and provide some form of economic statement in advance of building which would assist the client to feel that the architect was greatly concerned with the economical functions of the building in regard to running cost and subsequent maintenance.

On the second point—'cost per place', which Mr. Ling mentioned—before the war in all competitions and major developments, costs were determined on cost per cubic foot, which reflected a good standard of design and flexibility within those amounts. Have we got that with the cost per place which is being nationally imposed on us? Is there not a great need for a study group to consider the effect of the cost per place? Is it encouraging 'a penny-in-the slot' attitude towards design, and how does it affect our clients in relation to maintenance? These, I submit, are points which should be considered.

As regards the third criticism—the function of the architect in regard to speculative development, especially town centres and redevelopment—can the Institute help the architect in his client relationship? How often are members of the profession designing buildings to a minimum standard of design and construction against their

wishes? How often is the maximum ground rent dictating the design and construction of the building? I feel that a detailed study of town centre design in its varying aspects should be made by the Institute.

Mr. Leonard C. Howitt [F] (City Architect, Manchester): I should like to speak on the question of how the architect should deal with specialist work such as structural engineering, heating and ventilation and electrical engineering. There are, of course, at least three solutions, and the right answer is not necessarily the one that gives the least trouble to the architect but that which gives the most efficient and most economical service to the client.

One solution is to employ within the architect's organisation engineers qualified in these respective spheres. Here I must say that I fully agree with Mr. Ling that in the case of a local authority these specialists should be on the staff of the architect's department. If the architect has to go to another department for these services, then the organisation is bad to that extent. I do not care whether it is the L.C.C. or any of the other big authorities; the organisation in those circumstances is still bad.

The second solution is to employ the services of private consultants. The third is to entrust the job to a selected specialist sub-contractor who will provide all the design services required.

The first solution provides for few complications, provided that there are sufficient salaried engineers of the right calibre available, and, other things being equal, the result of competitive tendering among selected specialist firms should ensure that the client is obtaining, for the minimum amount, what the engineer has designed. In this kind of work the criterion for judging a design is performance, not taste, and the unknown factor is whether some other technical agency could achieve the same performance by a more economical design; thus the skill of the engineer is a decisive factor.

The second solution has the same effect at probably a higher cost for professional services, and the technical skill of the consultant is again a decisive factor.

The third solution introduces complications; there is no competition and not only can it be questioned whether the design is the most economical for the required performance but how is the client to be assured that the total cost is the least he need pay for the specified result?

A possible fourth solution is to invite competitive schemes and tenders from selected specialist firms, and here consideration of which is the best offer involves not only the amounts of the tenders but a critical examination of the relative merits of the competing schemes, which the architect might not be fitted to undertake. This procedure may be unfair to the contractors who incur considerable costs in providing competitive schemes and tenders.

The third solution is popular in the circumstances where it is permitted for a number of reasons. The cost of the specialist design is concealed in the tender and does

not involve asking the client to face another fee; the selected firms have usually worked with the architect before and know what he seeks to achieve, and the architect knows from experience that they will give him satisfaction.

Considering the position in the light of principles involved rather than from what can be achieved in practice it can be observed that many of the arguments used in favour of employing the contracting firm that gives an all-in technical service for the tender price could be used to justify a client employing a building contractor who gives an all-in tender which includes architectural services; in both cases the professional technician is employed by the contractor and not by the client.

Whether our profession is to continue to function in its traditional role as the agent of the client, whether remunerated by fee or salary, or, like the engineers, become largely employed by or as contractors, will no doubt become evident in the next few years. Some would welcome, but most would deplore, that development which, to my way of thinking, would have devastating effects upon many in private practice and adversely affect the progress of architecture.

If we accept the principle that independence in relation to the industry is the way of practising our art which is in the best interests of architecture, the client and the profession, might we not be inconsistent if we do not adopt the same attitude in seeking specialist advice, and therefore where we do not have the engineers on our own staff, should we not ourselves employ independent practising consultants?

We rightly claim to be the leaders of the building team for the other members are employed in one way or another in the process for which I can find no better description than 'materialising the architect's conceptions'. It is obvious that the architect cannot lead the building team if he is the paid servant of the builder; on the other hand, we must recognise that leadership involves taking responsibility and our claim would be even more justified if we modified our attitude towards the contribution of specialists.

I have no doubt that the client prefers an inclusive fee and a single channel of contact in dealing with his building operations; this simplicity is indeed one of the best selling points of the contractors who offer an all-in service. My view is that the architect as the leader must come to accept overall responsibility for the work of the team he leads. At the earliest possible stage he must decide whether the project is one which he can undertake completely or whether he will require the assistance of consultants in structural engineering, heating and ventilation and electrical engineering, and the fee he quotes should cover the comprehensive service, including quantity surveying. The choice of these specialists should be entirely his concern and he would select them with regard to the fact that he has to carry the full responsibility for what they do or do not do. This is, in fact, the comprehensive responsibility

which some of us in charge of large local authority architects' departments already carry. The acceptance of that responsibility is, in my humble opinion, the price we must pay if we are to maintain and justify our leadership.

It has been said that there are insufficient competent consultants in private practice to make this a practicable proposition. That being so, it may be due to the lack of sufficient demand for their services due to the use architects make of specialist contractors, but if architects create a greater demand, I think we are justified in believing that it would eventually be satisfied.

Mr. Harold Conolly [F] (County Architect, Essex): I want to enlarge upon something which Mr. Sheppard Fidler said yesterday in his paper, relating to tendering procedure. After all the work study and methods, etc., we eventually have to find our general contractor and get a price for the work. The whole business of tendering procedure, as Mr. Fidler said, has been the subject of a report by the Joint Committee on Tendering Procedure presided over by Sir Howard Robertson, and out of that grew the Joint Consultative Committee. This Committee has worked for a couple of years on a code of tendering procedure which is very shortly to be issued.¹ This has been a hard job to hammer out, because it has needed the approval of the three constituent bodies—the R.I.B.A., R.I.C.S. and the N.F.B.T.E. It represents what in our opinion is a good code of conduct for everybody concerned. That is shortly to be published, and we hope to launch it, if we can, with a meeting at the R.I.B.A. We hope that when the code is finally published it will be universally adopted and used almost as invariably as the R.I.B.A. form of contract.

Architects are occasionally unfair both to their quantity surveyors and to the builders who are tendering. They rush the period for tendering and they generally give inadequate time for the study of drawings, which are sometimes difficult to see. The new code tries to set out what should be good conduct; such as preliminary invitations to tender so that the builder knows that in a fortnight or three weeks' time he will get something to price; and also proper documentation and the submission of scale drawings with bills of quantities, so that the tenderer has all the information before him on his office desk; and finally forms of tender, notification of tender lists and so on. The code starts on the basis of selective tendering.

Yesterday Mr. Pooley rather decried selective tendering. He is a young man of whose opinion I think highly, but I submit to him that the whole experience of the profession is against the use of indiscriminate or open tendering. I thought that battle had been won long ago. The builders vary. They vary in their size, their organisation and their know-how. Builders can be put into various classes relating to the jobs which they can do with success. There is no reason why they should not grow from one

size of job to another but it is no good a man taking on a job which is three or four times too big for him. Only disaster lies that way.

There is also the point that it seems ridiculous to ask 40 or 50 people replying to an advertisement to tender for a job of £10,000 in value. The cost to the industry is terrific. I saw it reported in the technical press that a former President of the London Master Builders Association had said that it cost the industry about £30 million a year in estimating costs, and if you save 5 or 10 per cent of that you are in effect reducing building costs, because sooner or later the building owner has to pay the £30 million.

In the DAILY TELEGRAPH this morning it is reported that selective tendering is more expensive than 'open' tendering. In my experience that is not so, and I think that it is also the experience of a number of my colleagues in local government and Government departments. It is necessary to put people into their proper category so that you get an economic price, not necessarily the very cheapest price (because there is always somebody not capable of doing the job who will undercut) and the important factor is not the tender price but the final cost of the job when completed.

I urge that all the members of the Institute at this Conference should give the code of tendering procedure a very fair hearing.

Mr. Johnson Blackett [F] (Borough Architect, Newport): I want to comment on something which was said by Mr. Howitt. I agree with him, also with what Sir Thomas Bennett said with regard to the question of office organisation so as to include ancillary and engineering staff to do the whole job so that the architect can be, as Mr. Ling says, at the top of the package. That is something for architects in private practice to think about. The largest firm anyhow, should aim at it. Most of the big civil engineering consultants are now employing architects and have entered the field of architectural practice in a substantial way. Similar service is offered by industrial services and control is being taken out of the hands of the profession.

Coming to the question of specialist engineering services, there is a danger here, a danger in costs particularly. An experience which I have had recently has led me to recommend my authority to employ a qualified firm of reinforced concrete consulting engineers, not sub-contractor specialists. When analysing tenders for a secondary school and I found that the cost was such that it would be in excess of Ministry cost place allowance, examination of the figures revealed that the cost of the reinforced concrete frame and floors was excessive. I wrote to the firm of specialist sub-contractors and asked them to let me know what they had included for design fees, because design fees are not counted against cost places. Having received the information, I was surprised to find that it amounted to 10 per cent, slightly more than the top scale of the Association of Consulting Engineers.

The point I am making is that we are paying full scale fees without the benefit of competitive tendering for this particular specialist work—they expect to get the job and generally do! It is difficult to go into competition with specialist sub-contractors for reinforced concrete work or steel work, because the firms approached expect to receive the job.

So by doing it the other way there is a diminution in the cost and by incorporating the bill of quantities prepared by the consultants in the main bill of quantities competitive tendering results, the work being done by the general contractor.

I support Mr. Conolly in his remarks about open tendering as against invitation tendering.

Some years ago my authority put a large housing contract out to tender. At that time, my authority, like others, invited tenders from everybody. We advertised in the technical press, the national press and the local press for tenders. By so doing we suffered very much. The Committee accepted the lowest tender which was very low indeed. The *bona fides* and bank references were all right, but we had constant trouble with the firm. Arbitration followed with the usual difficulties and expense and the firm went bankrupt. That is why I suggest that haphazard method of inviting anybody to tender for work is not good.

Mr. Brian Bagnall: Architects should consider the motives with which they consider some of the problems which have been raised. I think particularly that the matter of the architect's management of his office is sometimes so much in front of him that he is apt to forget the way he manages himself. With some reason he may occasionally be suspected of pettiness, even verging on unprofessional conduct.

There was recently a proposal to erect a building somewhere in the provinces and the architect's design was illustrated in the local paper. This was followed by a number of architects writing to the paper and criticising the design very grievously. It seems to me that this had one very serious effect. The architect himself, the author of the scheme, immediately went on the defensive and, if anything, entrenched himself still further in his approach to the job.

It seems to me in the first place that any architect who really felt seriously that the building was not a good design could have written a civil, reasoned and careful letter to the author suggesting possible revisions, which I am sure would stand a reasonable chance of consideration by the architect. This would be normal courtesy for the critic and it would be sound psychologically from the point of view of trying to get a better building. And would be better for the profession than some sort of mild exhibitionism in the press.

Secondly, I want to touch on the subject of the package deal. The term is used as though the architect recognises in it a 'take-over' bid for his bread and butter. He often appears jealous of the ability of the contractors to produce a service for the

¹ See page 397.

client. In some cases the client may in fact be offered a very good service, and I am certain that the architect must accept this as a challenge rather than a threat. It is not enough for an *ex cathedra* statement to come from Portland Place saying that the architect can do a better job unless previously the architect has been able to show quite clearly that he is capable of being the team leader. I think it is open to question whether the large numbers of architects who would be required today as team leaders have in fact shown themselves to be so.

Mr. Bryan Westwood: In our firm we are gradually being forced away from the independent consultant for mechanical services for two main reasons. I should like to hear the comments of other members on these reasons.

The first is the difficulty of maintaining the same standards in their work as in our own where one is being forced to a price per place. You have the case of the heating consultant who insists that the largest component in the boiler house must be able to be put on a trolley and carried around any of the equipment by a man standing bolt upright.

The second thing is the lack of control that one has over drawings. When you go to the specialist firm producing the equipment, you can insist that the drawings must be in your hands at a certain reasonable time and you can be reasonably sure of getting them. If you go to an independent consultant he will probably say that it is not his practice to show more than the main pipe runs and that until he has seen the equipment which the specialists will produce he cannot give you any drawings. We have had that two or three times with disastrous results for the client.

These are the two factors which we have found during 25 years of experience are the ones which in the end push you into the hands of the specialist subcontractor.

Mr. W. A. Allen [4] (Superintending Architect, Building Research Station): A strong point has been made about looking at the standards of the consultants whom we bring into this work. I think that their standards are often not as high as our own. Ours have been criticised sometimes, and I do not know how the consultants have managed to escape this criticism.

Some relevant studies have been carried out by the Building Research Station. An example is an analysis of the costs of flats, where we showed that the costs of very comparable accommodation varied over a ratio of as much as 2:1, which in itself is a disturbing ratio, but built into those differences were differences of more than 2:1 in the amounts of concrete used for the same basic structural job. Although this was not a full explanation of the difference in the cost, there was no doubt that it was a major influence in the differences between what would otherwise have been very similar results. It tempts one to think that you should perhaps specify to a consultant the amount of concrete that he is allowed

to use for a given function. It comes down to something like that if the standards of efficiency brought to bear are to be kept up to a decent level.

Another point about specialist consultants is this. We know that in the big offices, either official or private, specialist consultants can be in the team on the same basis as the architects themselves, and you can get a high grade of consulting service built into the organisation. This is scarcely practicable for the medium office and certainly not for most of the small offices. However, a very large part of the work which architects have to do is medium or small-scale work, often calling for an expertise lying outside our day-to-day familiarity but certainly not demanding a high-grade specialist. I am thinking here of the common run of lighting, heating, structural engineering work. It is work of a lower level than would exercise true specialist capacities, for the true specialist consultant can be an extremely high-grade man.

But it is this lower level of work which it is difficult for a small office to organise. It may have to be put out, and there may be delays because of this. You may have a good working arrangement established with consultants for it, but it seems to me that this medium-sized work which demands no specialist competence, is something that might best be organised within the profession. I should have thought for example that one well-trained technician could cover the engineering aspects of the lighting, heating and ventilation, acoustics, and structural side of this kind of work. It does not seem to call for the specialist, who might then be left to function at a truly special level on the kinds of work demanding his standard of competence.

Mr. John Stillman [4]: I am interested in the matter of specialist consultants and should like to ask a question relating to it: it refers to the matter of responsibility. We did a job where we had a performance specification, and we had some advice on it. We asked specialist heating firms to give us schemes and prices, and we chose the lowest. We had the submitted schemes checked professionally. Later difficulties arose on the site and there were certain troubles with the scheme. The firm put it right and it was all cleared up.

However, we had a terrible sense of helplessness because during the construction none of us could check whether we were getting the right things and whether they were in the right places. It has been suggested that the architect should deduct from his fees a percentage in respect of work designed by a specialist firm. As things stood on that job we were responsible for and paid for work which we could not supervise. For that reason we decided that for the next job we would have the services of a consulting engineer.

Mr. Allen's suggestion that one should train in one's office somebody to do the simpler heating and electrical work is a good one, but in the case of the bigger jobs there is the difficulty which I have described,

and I should like to know what one does about one's responsibilities in connection with such jobs.

Mr. Bryan Westwood: I think that one of the answers is to employ an independent consultant as that—strictly speaking—and pay him a fee for producing a sketch design for the scheme sufficient for tendering by a number of specialist subcontractors, and again employ him to check their work on the site. We have done that, and, rightly or wrongly, we have ourselves paid the fee for the independent consultant and not had any deduction from our fees in respect of that work. On the whole in our case that way of dealing with it worked very well. We have done it only once, but I hope that we shall do it again. The engineer concerned was pleased not to have to do a lot of routine drawing. He wanted to use his special expertise. On the other hand, we did not have the worry of site supervision when we were incompetent to deal with the specialist equipment involved. I think that is the way the problem should be explored.

The President: I now ask Mr. Alick Low to sum up this discussion.

Mr. Alick Low [F]: Mr. Baxter and Mr. Ling raised the subject of maintenance being built into the architect's agreement. Maintenance considerations are part of the design of a building, but how to make the architect responsible in perpetuity for what he has done is another problem.

I hope very much that the R.I.B.A. will take note of the various comments which have been made in our discussion this morning because I think that a special study group could look into the relationship between architects, consultants and specialist contractors.

Mr. Howitt mentioned inclusive fees. Some private offices have been working on inclusive fees for some time. One of the difficulties is that our fellow consultants are not sure that they are prepared to play ball with the architects on combined fees. For instance, the Association of Consulting Engineers will not allow an engineer in partnership with an architect to be a member of their Association, whereas the R.I.B.A. has no objection. This needs discussion between the professional bodies.

I was interested in the remarks made by Mr. Johnson Blackett, especially his point about architects who do not always use consultants. They are not always allowed to use consultants. Many local authorities, for example, do not do so. A report giving a comparison of design costs as between specialist contractors and consultants would be a very useful document.

One of the most interesting points that has come out of this morning's discussion was raised by Mr. Allen; that of the place of building technologists in small offices. One of the problems of the small office is to obtain the combined specialist advice that is needed to design a job. Professor Harper at Manchester University should shortly be producing graduates to fill this need.

That leads me to another point which was mentioned, the type of consultant available to architects. Most electrical and heating consultants are not really organised to do the type of work that an architect needs. For example, a large electrical consultant is best able to cope with power generation and distribution. These offices should have sections which are purposely set aside for architectural work. On the other hand many subcontractors have staff who really know their job from the architect's point of view.

I want to say something else which has nothing to do with the third stage of our discussion. It has been mentioned this morning and is the question of design by principals. This is a problem which exists throughout the architectural profession, in both large and small offices. I do not really think that an architect can go on designing, by this I mean producing original and interesting work, all his life. He has to stop this sort of work some time and make way for a young and more vigorous person who can correlate ideas much faster. Unless the principal or the leader of the office, whether it is private practice or local authority, has trained himself to be an administrator and an efficient architect (which is what we have been talking about) and can organise an office within which good designers can flourish, he will be extremely disappointed in his old age.

The President: I feel that I should bring this discussion to a close now. I need hardly say that it has ranged over a very wide series of items dealing with the question of efficiency. Personally, I should like to hear a little more about the confidence side, because I am certain that the spearhead of it is the confidence that the client has in his architect, and that in itself is a very deep and important subject. I am certain that a great deal of useful information has come out today. It has all been noted, and the relevant points will go to the relevant committees for discussion. We do not want to let it disappear. It will have to be recorded and made use of if the Conference has any object at all.

Before I close the Conference I should like to express the thanks of the R.I.B.A. to all the speakers and to all those who have contributed to our discussion. We owe them a great debt. Some of them have prepared their points of view most carefully, and I thank them on your behalf.

I also thank the R.I.B.A. Committee under the chairmanship of Bill Allen. He has worked very hard, and the Committee has gone to an immense amount of trouble to ensure a stimulating Conference, and I think I may say with confidence that they have achieved their objective with marked success.

NOTE: The R.I.B.A. Council recently set up a Management Committee which is taking over the work of the Cost Research Committee and expanding it to cover office and job organisation; check lists, programming, communications, office methods, etc.

It is hoped that one of its first tasks will be to sift through the forms and check lists now used in architect's offices in a way that will make for simplification.

It would help the Committee if as many of these documents as possible could be sent to them, and members are accordingly invited to do so.

A Code of Procedure for Selective Tendering

Introduction

1. In order that its detailed recommendations may be most widely applicable, this Code assumes the use, in the contract which will follow tendering, of the R.I.B.A. Form of Contract where quantities form part of the contract. This assumption in no way precludes the Code's adoption in cases when other forms of contract are considered more appropriate, though minor details may require some modification.

2. The builder's tender is the price for which he offers to carry out and complete, in accordance with the conditions of contract, the work shown on the drawings and described in the bills of quantities. Good tendering procedure demands that in no circumstances shall the builder's tendered price be altered. Difficulties have arisen when an examination of the priced bills revealed errors or a discrepancy between these prices and the tender figure, that were not so serious as to require the builder to withdraw his tender. Hitherto, practice in dealing with such errors has varied considerably. This Code lays down a method whereby, before the builder's offer is accepted, errors in pricing may be corrected. The prices in the bills of quantities thus corrected, but without alteration of the tender figure, should be used for the purpose only of valuing variations. It should be a condition of tender that palpable errors in pricing or errors in arithmetic discovered before the acceptance of the builder's tender should be adjusted in accordance with this Code.

The List of Tenderers

3. Once it has been decided that a builder is to be selected by competitive tender there is but one way in which the list of tenderers should be prepared. From all the firms that are considered, or from those firms that reply to an advertisement inviting consideration, a short list should be carefully made of those of established skill, integrity and responsibility, and with a proved competence for work of the character and size contemplated. The selection should be made upon the advice of the architect, and with the approval of the building owner. Open tendering, that is, inviting tenders from all that reply to advertisements, is deprecated. The object of selection is to make a list of firms, any one of which could be entrusted with the job; if this is achieved, then the final choice of builder will be simple—the firm offering the lowest tender. Only the most exceptional cases demand departure from this general recommendation. Even when an early completion date is of the utmost importance to the building owner, it is preferable that the most convenient date

for completion be specified in the tender documents, and that all tenderers make offers based upon the same period of construction: it is unreasonable to expect builders to guess how the building owner may value time saved in duration of the works against the additional cost of accelerated work.

4. The size of the short list may be limited by the small number of firms who satisfy the required qualifications. When this is not so, an average list should include about six names, with fewer for smaller works and more for larger ones, and an absolute maximum of twelve names for very large contracts. It should be appreciated that the cost of tendering is a not inconsiderable element in the cost of building: the larger tender lists become the greater will be the cost of abortive tendering, and this must be reflected in building costs; if the average length of tender lists is reduced, then building costs will be correspondingly lowered. When the list has been settled one or two names should be appended in order that they may replace any firms on the list that do not accept the invitation.

Invitations to Tender

5. In order that builders may be able to decide whether they will tender, and to anticipate demands on their tendering staff, each firm on the short list should be asked whether it is willing and able to tender. They should answer within a stipulated time, so that the reserves may be called upon if necessary. The letter inviting the builder to tender should be sent by the architect, and should contain:—

- (a) the names of the building owner, the architect, the quantity surveyor and any consultants with supervisory duties;
- (b) details of the Form of Contract to be used;
- (c) the location of the site;
- (d) a general description of the works and an outline of the method of construction, sufficient to enable tenderers to assess the character and size of the contract;
- (e) the proposed starting date of the works. If time is to be of the essence, this should be made clear to tenderers. The time for completion should be stipulated, and not made a subject of competition;
- (f) the proposed dates for the despatch of the bills and submission of the tenders;
- (g) a provision that acceptance of an invitation to tender is to bind the tenderer not to disclose his tender to any person or body before the time for receipt of tenders;
- (h) a request that each tenderer state how many unbound copies of the bills, or sections of the bills of quantities, would

INVITATION TO TENDER

Dear Sirs,

I am authorised to invite you to submit a tender for the construction of the works described below. Your acceptance will imply your agreement to submit a wholly *bona fide* tender and not to divulge your tender price to any person or body before the time for submission of tenders.

If you are able to accept this invitation please inform me whether you will require any additional unbound copies of the Bills or sections of the Bills of Quantities in addition to the one bound and one unbound copy that it is proposed to send you. These additional copies will be supplied on repayment of the costs of reproduction.

You are requested to send me your answer by
Your inability to accept will in no way prejudice your opportunities for tendering for further work under my direction. In this connection your attention is drawn to paragraph 11 of the Code of Tendering Procedure currently published by the Joint Consultative Committee of Architects, Quantity Surveyors and Builders.

Yours faithfully,

Architect.

- (a) Job
- (b) Building Owner
- (c) Quantity Surveyor
- (d) Consultants with
supervisory duties
- (e) Location of site
- (f) General description of
works
- (g) Form of contract
- (h) Proposed date for possession
- (i) Period for completion
of works
- (j) Date for despatch of all
tender documents
- (k) Date for submission of
tender

APPENDIX A

be required in addition to the two copies it is proposed to send:

- (i) the latest date for the acceptance of the invitation.

6. See Appendix A for suggested form on which invitations to tender may be modelled.

The Tender Documents

7. When answers to all invitations have been received, the list of tenderers will be finally settled. On the day stated in the invitations, all tender documents should

be despatched. These documents should include:—

- (a) two copies of the complete bills of quantities, together with any additional copies or sections which may have been requested;
- (b) reproductions of general arrangement drawings sufficient to indicate the character, shape and disposition of the works, to be used solely for the purpose of explaining the nature of the scheme;
- (c) two copies of the Form of Tender;
- (d) one addressed envelope for the return

FORM OF TENDER

Tender for (description of Works)
To (Building Owner)

Sir(s),

I/We having read the Conditions of Contract and Bills of Quantities delivered to me/us and having examined the drawings referred to therein do hereby offer to execute and complete the whole of the works described for the sum of:

(£ : :)

and within the period stated in the Bills of Quantities and I/We undertake in the event of your acceptance to execute with you a form of contract embodying all the conditions and terms contained in this offer.

I/We agree that should palpable errors in pricing or errors in arithmetic be discovered before acceptance of this offer in the priced Bills of Quantities submitted by me/us that these errors be adjusted in accordance with the recommendations contained in paragraph 14 of the Code of Tendering Procedure currently published by the Joint Consultative Committee of Architects, Quantity Surveyors and Builders.

To be deleted if not applicable { A list of Basic Prices of Materials and Goods on which this tender is based is attached to the Bills of Quantities and this list shall be used for the purpose of calculating the costs of Fluctuations in accordance with Clause 25(A) of the Conditions of the Contract. The date on which the said Basic Prices were operative was

I/We further agree that this tender remain open for consideration for weeks.

Dated this day of 19

Name

Address

Instructions to Tenderers

Tenders are to be sealed in the endorsed envelope provided and delivered or sent by post to reach

not later than a.m. on the
p.m.

day of 19

APPENDIX B

of the Form of Tender, with an endorsement naming the job:

- (e) Instructions for return of the tender:
- (f) if the tender is on a fluctuating basis, the date on which basic prices are to be determined: this date should be some days before the date for submission, in order that hurried, eleventh hour, alterations are avoided.

Form of Tender

8. The Form of Tender should be sent in duplicate, in order that tenderers may retain

a copy of their offers. The tender itself should be conditioned by clauses stating:—

- (a) that the tenderer is willing to execute a Form of Agreement completed as described in the bills of quantities;
- (b) that any tenderers' errors in the priced bills do not affect the tender price and that these errors be adjusted in the manner described in this Code;
- (c) the limit of the time the tender will be open for consideration.

9. See Appendix B for a suggested Form of Tender.

Time for Tendering

10. Except in special circumstances, four weeks should be allowed for preparation of tenders. A shorter period will seldom be sufficient to enable the tenderer to obtain competitive estimates for the supply of materials, or the execution of works that it is intended to subcontract. The limit of the time for submission should be specified as an hour of a day, and should be chosen to allow as short a time as possible to elapse before the opening of tenders. Tenders received after time should not be considered.

Cover Prices

11. Tenders should be wholly *bona fide*. The practice of providing information for 'cover prices', other than in most exceptional circumstances, is deprecated and is contrary to the tenets of good tendering procedure. In order to avoid such practice those inviting tenders should make it clear that to decline an offer to tender will in no way prejudice the chances of those invited to tender to have the opportunity of tendering for future work for the architect or building owner concerned. See Appendix A.

Opening Tenders and Notifying Results

12. If the foregoing recommendations are followed, it is reasonable to expect that tenders will be competitive and that each tenderer will be anxious to know whether his offer is lowest. This information will be important to the successful tenderer, who will require the earliest intimation in order to settle to the best advantage any subcontracts for materials and services. The knowledge that his tender is not being considered may influence a builder to tender more keenly for other work. Conversely, when a firm believes that a number of its tenders is being considered, it may be reluctant to tender elsewhere. The rapid notification of results of tendering should be considered as a public duty.

13. The practice of inviting tenderers to be present at the opening of tenders offers the most convenient and quickest method of notifying them of the results. Where this is not possible, each tenderer should be sent, at the earliest opportunity, a complete list of the names of, and amounts submitted by, other tenderers. In normal circumstances

there should be no reason to consider acceptance of any tender but the lowest, but it is recommended that, until the lowest tenderer has been informed of the intention to accept and his priced bills of quantities examined, the second lowest tender be kept open. This precaution will serve the building owner's interest if the lowest tenderer should, for any reason, withdraw his offer before acceptance. As soon as the decision to accept a tender is reached, any unsuccessful tenderer whose tender has until then been kept open should be informed immediately.

Examination and Adjustment of the Priced Bills

14. The examination of the priced bills of quantities should be made by the quantity surveyor who should treat the document as strictly confidential: on no account should any details of the tenderer's pricing be disclosed to any person except the architect unless with the expressed permission of the tenderer.

The first object of the examination is the detection of errors of an extent that might cause the tenderer, once he is aware of them, to withdraw his tender. If the quantity surveyor finds such errors he should report them to the architect, who should indicate to the tenderer the value of the errors and give him the opportunity of confirming or withdrawing his offer. If the tenderer withdraws, the priced bills of the second lowest should be examined.

When a tender is found to be free of serious error, or the tenderer is prepared to stand by his tender in spite of an error, then the architect should inform the tenderer of its acceptance: before doing so, the architect would be well advised to obtain authority from the building owner.

The method of adjusting any such errors should be to add an endorsement to the priced bills indicating that all rates or prices (excluding preliminary items, prime cost and provisional sums) inserted therein by the tenderer are to be considered as reduced or increased in the same proportion as the corrected total of priced items exceeds or falls short of the original total of such items. This endorsement should be signed by both parties to the contract.



Practice Notes

Edited by Charles Woodward [4]

IN PARLIAMENT. Royal Fine Art Commission. Sir W. Wakefield asked the Minister of Housing and Local Government and Minister for Welsh Affairs the criteria under his regulations which enable the London County Council to determine whether new building proposals are of sufficient importance for consulting the Royal Fine Art Commission as to their suitability for the neighbourhood.

Mr. H. Brooke: It is entirely within the discretion of the London County Council to decide whether or not to consult the Royal Fine Art Commission on a particular building proposal. The Commission can also on its own initiative, take up a proposal with the London County Council, because it is empowered by Royal Warrant to call the attention of any Department of State, or of the appropriate public or quasi-public bodies, to any project or development which seems to it likely to affect amenities of a national or public character.

Sir W. Wakefield asked the Minister of Housing and Local Government and Minister for Welsh Affairs on how many occasions during the last five years the Royal Fine Art Commission has been consulted on proposed new building within the metropolitan area, in respect of applications which have been referred on appeal to, or called in by, his Department.

Mr. H. Brooke: I am afraid that no record has been kept of this particular information.

London County Council (Building Proposals). Sir. W. Wakefield asked the Minister of Housing and Local Government and Minister for Welsh Affairs if he is aware of public anxiety at the failure of the London County Council to provide opportunity for interested parties to see new building proposals before planning permission is granted; and if he will review the present procedure.

Mr. H. Brooke: I sense a stronger public desire to see the time taken in reaching planning decisions shortened than, in general, to add to the time by providing for more extensive consultations. Perhaps my hon. Friend will let me know what practical proposals, not involving further delays, he has in mind. (14 July 1959).

NATIONAL JOINT COUNCIL FOR THE BUILDING INDUSTRY. Working Hours. The National Joint Council for the Building Industry at its meeting in London on 23 July 1959 approved two recommendations on working hours in the industry. They are:

- (a) That as from the beginning of the first pay-week in October 1960, the normal working hours throughout England and Wales shall be 44 per week, but subject to the present agreed provisions governing working hours during the 'Winter Period'.
- (b) In the circumstances and conditions applying in the industry today, especially

where the location of jobs involves operatives in a substantial amount of daily travelling and/or where overhead costs are such as to make Saturday morning working largely uneconomic, it should be permissible by arrangement for the normal weekly hours to be worked in five days (Monday to Friday) at ordinary plain time rates.

The consequential alterations to the industry's working rules are to be drafted by the officers of the N.J.C. and will be submitted to the Joint Council in October.

The Joint Council agreed that its Committee which it appointed last year should continue to keep under consideration the question of working hours in the building industry.

JOINT CONSULTATIVE COMMITTEE OF ARCHITECTS, QUANTITY SURVEYORS AND BUILDERS: Procedure Note. Forms of Interim Valuation. The Joint Consultative Committee of Architects, Quantity Surveyors and Builders are of the opinion that the following details should be included in a Form of Interim Valuation.

- (a) Site or contract.
- (b) Name of contractor.
- (c) Date and serial number of valuation.
- (d) Estimated total value of work executed.
- (e) Estimated value of materials on site.
- (f) Adjustments for fluctuations, if any.
- (g) Retention.
- (h) Amount of previous certificates.
- (i) Amount recommended for certification.
- (j) The gross amounts included under (d) above in respect of each nominated sub-contractor should be given in an attached statement or endorsement.
- (k) Signature of quantity surveyor.

MINISTRY OF LABOUR AND NATIONAL SERVICE. Factories Act, 1959. The Factories Bill received the Royal Assent on 29 July 1959. The new Act amends the Factories Acts, 1937 and 1948, and makes further provisions as to the health, safety and welfare of workers in factories, and other places subject to the Factories Acts.

The Act does not come into operation at once. The Minister of Labour is given power to bring the provisions into effect by Order, and to appoint different days for different purposes.

In a Parliamentary written answer on 29 July, the Minister, Mr. Iain Macleod, indicated that it was his intention to bring all the provisions into operation at the earliest practicable date. He intended, subject to consultations with interested organisations, to make an Order bringing about half of the provisions into operation on 1 December 1959. Certain of the other provisions—for instance the Sections on cleanliness, dangerous substances, safe means of access and place of work, dangerous fumes, washing facilities, first aid—will involve preparatory work being done by the employers, for example, the construction of fencing, the provision of new equipment or the necessary training of workers. Some extra time must be allowed for these purposes.

The important fire provisions of the Act (Sections 9 to 17 and 24) involve administrative changes affecting local authorities and the Factory Inspectorate, and these will have to be discussed with the local authorities concerned before the date of operation can be decided.

The new Act has the following objects: to improve the existing provisions with regard to fire precautions in factories; to place on the Minister of Labour and National Service the duty of promoting health, safety and welfare in places under the Factories Acts by collecting and disseminating information.

In addition, the Act increases the maximum fines which can be imposed for contraventions of factory law, and strengthens certain existing safety provisions of the Factories Act, 1937, including those relating to dangerous substances and fumes, lifts and cranes, and the maintenance of floors, passages and stairs.

MINISTRY OF HOUSING AND LOCAL GOVERNMENT. Town and Country Planning Act, 1959:

The Town and Country Planning General Development Order, 1959.

The Town and Country Planning (Prescribed Forms of Notices) Regulations, 1959.

The Town and Country Planning (Limit of Annual Value) Order, 1959.

The above 3 Statutory Instruments under the Town and Country Planning Act, 1959, were laid before Parliament on 29 July. They came into operation on 16 August—the date the Act itself came into operation—but are subject to annulment by either House.

The General Development Order, 1959.

This order does three main things:

1. Articles 3, 4, 5 and 6 set out the procedure with regard to 'certificates' under section 5 of the Act. (A 'certificate' is the statement which will be needed in some cases in ascertaining, for the purposes of compensation, the fair market value of land being acquired by a public authority).
2. Article 7 designates the classes of development for which, under section 36 of the Act, applications for planning permission will, from 16 August, have to be advertised; the first schedule prescribes the form of the advertisement.
3. Article 8, and the second schedule, prescribes the form of certificates and notices under section 37 of the Act (which requires applications for planning permission, from 16 August, to be notified to the owners and agricultural tenants of the land concerned).

The Prescribed Forms of Notices Regulations

The regulations prescribe the form that notices referred to in the Act in respect of the following provisions, are to take:

1. Long-standing notices to treat (forms 1 and 2)

2. Additional compensation for additional development (forms 3, 4 and 5)

3. The obligation of authorities to purchase forthwith the property of owner-occupiers affected by 'planning blight' (forms 6 and 7). Form 6 is the one which should be served on the authority concerned by the owner-occupier who wishes them to acquire his property forthwith.

The Limit of Annual Value Order

This order was the subject of the following Parliamentary Question and Answer:

Mr. Ramsdon: To ask the Minister of Housing and Local Government and Minister for Welsh Affairs, whether he has now considered the representations he has received as to the appropriate level of rateable value to be fixed for the purpose of Section 39 of the Town and Country Planning Act, 1959; and what decision he has reached.

Mr. Brooke: I have considered these representations and, after carefully studying them, have decided to adhere to the figure of £250 net annual value, which I believe will bring the great majority of small business owner-occupiers within the terms of the Act. I am laying an Order today accordingly. I propose to ask local authorities, in a circular to be issued shortly, to exercise discretion beyond this figure where there is genuine hardship; I already have an assurance from the local authority associations that cases of hardship can be met, provided the authorities are allowed to purchase at discretion in advance of requirements. I intend to watch the position carefully. (29 July 1959.)

TOWN AND COUNTRY PLANNING ACT, 1959—SECTION 37. The Town and Country Planning General Development Order, 1959. Minister's Guidance to Local Authorities. Important changes are made by section 37 of the new Town and Country Planning Act and the General Development Order as regards applications for planning permission, and appeals to the Minister against decisions on such applications, made on or after 16 August 1959—the date on which the Act and order came into operation.

The Minister has sent to local authorities suggested Notes for Applicants, for the guidance of those people who wish to apply for planning permission; they include copies of the certificates and notices required for applications.

Applications

Section 37 provides that applications for planning permission made on or after 16 August must be accompanied by a certificate in the appropriate form—to show either that the applicant is the owner of the freehold or has a tenancy of all the land concerned, or that he has given to those concerned the requisite notice containing information about the application (either by individual notice or by advertisement in a local newspaper). The applicant must also, whether he has an interest in the land or not, certify that he has notified any agricultural

tenant of the land concerned individually. Where a notice has to be published in a newspaper, an application cannot be made until 21 days after the publication of the notice.

These provisions carry out a recommendation of the Franks Committee. Their object is to secure that owners and agricultural tenants are made aware of proposals to develop their land so as to give them an opportunity of making representations to the planning authority. The planning authority are required to take account of representations received within 21 days.

The forms of certificate and notice have been prescribed by the General Development Order. It is the duty of applicants to give the necessary notices and provide the appropriate certificates in the form prescribed.

Appeals to the Minister

The procedure outlined above in respect of applications will also apply as regards appeals to the Minister, made on or after 16 August, against the decision of a planning authority on an application for planning permission. Appellants will be required to supply fresh certificates to the Minister: the necessary certificates and notices, so far as they relate to appeals to the Minister, together with Notes for Appellants, for the guidance of appellants, will be provided by the Department on request.

Circular 48/59 dated 11 August addressed to local authorities in England and Wales contains an explanatory memorandum on the provisions of the Planning Act, 1959, in respect of compensation for compulsory acquisition of land, obtainable at H.M.S.O. price 1s. 3d. net.

Circular 49/59 dated 10 August refers to Purchase Notices under the Planning Act, 1947, and the amendments made by the Planning Act, 1959. The appendices contain the information and documents to be sent to the Minister by local authorities in England and Wales.

The Circular emphasises that where a local authority is unwilling to comply with a purchase notice, the statement of reasons should be full and clear, and the applicant should not merely be told that his land has not become incapable of reasonably beneficial use in its existing state; he should be given, as fully as possible, the reasons for coming to that conclusion. The Circular is obtainable at H.M.S.O. price 6d. net.

LAW CASES

Stephens v. Cuckfield Rural District Council. Town and Country Planning Act, 1947. Section 33. Queen's Bench Division, March 1959. In April 1957 the local planning authority served on the plaintiff a notice, purporting to be a notice under section 33 of the Town and Country Planning Act, 1947, which required the plaintiff to remove all cars, car bodies and machinery from the 'open land within the curtilage' of the premises. Section 33 provides that if it appears to a local planning authority that the amenity of any part of the area of the

authority is seriously injured by the condition of 'any garden, vacant site or other open land' in their area, they may serve a notice on the owner of the land requiring him to abate the injury in the way specified in the notice.

The Court held that the notice was a nullity since on its true construction, section 33 of the Act of 1947 must be limited to cases where the 'garden, vacant site or other open land' was not within the curtilage of a building.

Per curiam: it may be that the curtilage is not the real test, but that the test is whether, as in the Use Classes Order, 1948 (S.I. 1948 No. 955) the land is occupied with and used for the same purposes as the building. ((1959) 1 All England Law Reports. 635.)

London County Council v. Tobin. Compulsory Purchase. Costs incurred in formulating a claim. Court of Appeal. March 1959. *Held:* Legal and accountancy fees reasonably and properly incurred by a claimant in preparing his claim for compensation on the compulsory acquisition of his land should be included in the compensation awarded. ((1959) 1 All England Law Reports. 649.)

Book Reviews

Modern Flats, by F. R. S. Yorke and Frederick Gibberd. 11½ in. 211 pp. incl. illus. Architectural Press. 1958. £3 3s.

This book is not a re-issue of the same authors' work on *The Modern Flat*, which was published in 1937. It is a completely new work presenting a review of flat buildings of the period 1947-57 in photographs, plans, details and notes. Wisely, no critical observations are made, other than those implicit in the selection of examples, nor is it a treatise on flat design except by way of the reader's own deductions. The aim is to record progress and achievement in the first post-war decade, and the representative selection of 67 schemes from 16 countries do form a very fair picture of what has been done.

For those familiar with the 1937 volume, there are many interesting comparisons to be noted: in the increasing fluency of flat design, in the emphasis on comprehensive development schemes rather than on individual buildings, and in the simple volume of building of this type. It would be interesting to know what percentage of the total of flats built in the respective periods is illustrated by the two volumes. While the present book is concerned with an accepted building type recognised as a necessity for our urban populations, the earlier one was concerned with arguing the case for the desirability of building flats. The comparison in terms of architectural form is familiar, but is particularly clear when summed up so succinctly in one class of building. It is instructive, too, to compare the format of the two books.

In the brief introduction the authors sum-

marise the prevailing tendencies in flat design. It is a pity that brevity has induced them to state that the tendencies they find are revealed by '... the schemes illustrated in the present volume ...', when we would prefer to believe that they have actually been deduced from the comprehensive review that has presumably preceded publication. The making of general statements from selected data is a very common failing today, but one that should not be encouraged, especially among the many students, who will certainly be referring to this book.

C. H. COOPER [4]

English Church Plate 597-1830, by Charles Oman. 11in. 356 pp., 200 plates. Oxford University Press. 1957. £6 6s.

So many volumes nowadays are glossy rehashes of 19th-century scholarship, repeating old information and often old mistakes in a contemporary format, that it is most welcome to find a new work which is the result of original study and research. Such is the magnificent and authoritative volume *English Church Plate 597-1830* by Mr. Charles Oman, Keeper of the Department of Metalwork at the Victoria and Albert Museum, and published by the Oxford University Press at six guineas.

This is the first book to be devoted entirely to the plate of the Church of England and Wales, although, of course, there is a considerable literature in book and periodical form dealing with specialised parts of the subject. There are many omissions from and inaccuracies in this literature; for example, there is no inventory existing of the church plate of Derbyshire or Huntingdonshire. One can have nothing but admiration in reading Mr. Oman's book for its obvious completeness and accuracy. Clearly, here we have collated the fruit of years of study and original research. Existing examples are related to their historical and devotional background and a clear picture is given of the form, usage and extent of the work of the English goldsmiths at every period to 1830, and the various effects of changes in liturgical and devotional fashion. New ground, too, is broken in dealing at length with the plate of the Laudian Gothic revival of the period 1620 to 1704 (71 items are listed) and the plate made by English goldsmiths for the Catholic recusants during the penal period.

The important social position of the great goldsmiths of the early period and the incredible wealth of Anglo-Saxon, Norman and Medieval churches is so fully documented that the tragedy of the wholesale destruction of pre-Reformation plate is tantalisingly shown. That Mr. Oman can list 141 medieval chalices and patens is incredible, considering the odds against their survival. Many are neither well nor generally known; some, as the Ramsey Abbey censer and the Ramsey Abbey incense-boat, are amongst the finest works of art of any country or any period.

It seems to me regrettable, however, that the subject should be arbitrarily closed at

1830 and that the decline during the remainder of the 19th century, the considerable revival from the early years of this century, and considerable renaissance of quite recent years, should be ignored and not related to historical continuity. But the author states clearly what he has treated, and what he has not, pointing out that the volume would have grown to quite unwieldy proportions.

The book has no pretensions to being a critical appraisal of the aesthetic or craft side of the subject—Mr. Oman is not concerned with how objects were made, how gilded, how enamelled, or whether decorations were formed in the body of the vessel or applied. In many ways the weight of the objects is of considerable importance and one should be able to relate weight to size.

The volume is illustrated by a Frontispiece and 199 superb plates, which amply illustrate the text.

LOUIS OSMAN [F]

Six Great Architects, by *Robert Lutyens*. 7½ in. 190 pp., 12 illus. Hamish Hamilton. 1959. 12s. 6d.

This little book is one of 23 devoted to great men and women in various fields of activity, and it is gratifying to find architects given an equal place in the series with mountaineers, scientists and doctors. According to their publisher the books 'are intended primarily for the older Grammar and Secondary Modern School child and are particularly suitable for prizes'. Not unreasonably one would expect to find in them material selected for its appeal to the teenager and likely to stimulate his or her interest in the subjects under discussion, be they six great railwaymen or six great dancers. As far as *Six Great Architects* is concerned such expectation would, it is feared, be unfounded.

This is a pity, for architecture is an exciting business and a book conveying something of this excitement to the teenager could have done immeasurable good. Read by no more than 1,000 young people at an impressionable period of their lives, such a volume would in the years to come have provided a worthwhile force of 1,000 adults aware of the aims and problems of the architect.

The book is restricted to the English scene and a further limitation is imposed by confining it to architects who worked chiefly in variants of the classical idiom. Neither limitation is implicit in the title, and both are likely to give rise to all sorts of assumptions and misconceptions on the part of the reader, not the least unfortunate being that there is architecture and modern architecture.

The second limitation has necessitated a somewhat unwieldy introduction, explaining: (a) the evolution of the Orders and (b) the inception of the Renaissance, after which follow short essays (most of which are prefaced by comments on the social and general background), on Jones, Wren, Vanbrugh, 'Adam and his brothers', Nash and Lutyens. Accepting its geographical and

historical limitations, the book is carefully compiled, but one wonders why Nash was included rather than Soane. The essay on Lutyens is a lively piece, but the others seem hardly calculated to send the blood coursing more rapidly through adolescent veins.

Scattered through the book there are some general comments likely to confuse the reader—for instance, a reference to this country 'discarding the religion of Italy' at the time of the Reformation (p. 41)—and the apparently intentional use of 'Vetruvius' rather than the accepted spelling is an affectation surely out of place in a work intended for young people.

FRANK I. JENKINS [A]

Some Examples of Irish Country Houses of the Georgian Period, by *John Jay Ide*. 7½ in. 66 pp. incl. illus. New York: Thistle Press. 1959. For private circulation only.

The Georgian Society Records, some COUNTRY LIFE articles and, in the case of one or two examples in Northern Ireland, brief National Trust monographs; these are the main published sources of information about Irish country houses—houses in which almost from the first the Palladian element was present. There is, however, neither a comprehensive commentary on this subject nor was there, before Mr. Ide's little book, a handy catalogue of typical properties comparable to the 'National Trust Guide. Buildings'.

The present volume introduces sixteen Irish monuments of the Georgian period. Included are such well-known works as the Casino at Marino, by Sir William Chambers and James Wyatt's Castle Coole, while also described are the Adam works at Headfort House and Nash's remodelling of Caledon. Some half-dozen of the other houses mentioned lack architectural distinction, but none are without interest. Palladian specialists will enjoy Castletown, County Kildare, a luxuriant if colourless hybrid; its later and more distinguished namesake in County Kilkenny; the delightful Carton in County Kildare and that magnificent house, Russborough in County Wicklow. The four latter examples date from the formative phase of the building of Irish country houses and are, respectively, the works of Thomas Burgh and Edward L. Pearce, Ducart (or Arcort) and Castle (or Cassels). Castle, the architect of both Carton and Russborough, was, like Ducart, of Continental origin.

In Mr. Ide's and other recent essays dealing with early Georgian work in Ireland, attention is drawn to the lack of exact information about the first use and the first users of Classical architectural form in that country. And, if one may take the point further, it is with the recollection of Sir John Summerson's statement that a probable initial common factor in Anglo-Irish Palladianism is to be found in the person of Richard Boyle, 3rd Earl of Burlington and 4th Earl of Cork. If such is the case, and the matter is surely beyond dispute, it would seem reasonable to suppose that in Ireland, perhaps even more than in England, Burlington would have called in

his architectural collaborators. Yet the known facts indicate that the foremost English Palladians ignored Ireland; and it is almost without reward that one consults, for instance, Mr. Colvin's *Dictionary* for evidence of the employment in Ireland of others we may consider to be Burlingtonians. On the strength of other information, Castle is a likely if unimportant exception. In these circumstances, therefore, there would appear to lie the diverting prospect of a Palladian architecture which evolved in Ireland largely free from English influence.

In the space at his disposal, Mr. Ide has not the opportunity to comment upon such matters: he modestly presents the basic facts and takes his leave with the hope that his book may lead to detailed work by other students of this worthy subject. Such inquiries will not long be delayed. It is certain that readers of this guide will find much to exercise the imagination. The little book serves to extend interest into an aspect of the Palladian past and, if for this reason alone, its appearance is welcomed.

DEREK BUTTLE [A]

The Early Sculpture of Ely Cathedral, by *George Zarnecki*. 9½ in. 52 pp. excl. plates. Tiranti. 1958. 18s.

Do not be put off by the recondite title; this little book is as readable as a novel. It deals principally with the three ornate Romanesque doorways at Ely—Vestry, Monks' and Prior's: and it describes and illuminates at the same time. The description of the Monks' Doorway on page 21, with an eloquent engraving of the door opposite, has been made into a compound work of art in itself, and without losing an ounce of scholarship on the way. And then it traces the hybrid ancestry of the doorways to unlikely places such as Pavia and Anzy-le-Duc, in art-historical whorls as intricate and elegant as those on the jamb and arches of the Prior's, carved, as Dr. Zarnecki says, by a great artist who, 'for all his foreign sources, remained an artist for whom Anglo-Saxon art was still alive'.

Only Mr. Tiranti would produce such a book today, and I think only Dr. Zarnecki could have written it. This is art history and typography at its very best.

IAN NAIRN

Aluminium in Modern Architecture 1958. Edited by *John Peter*. 8½ in. 118 pp. incl. illus. Index. New York: Reynolds Metals Co.; Chapman and Hall. 1958. £2.

This is the first supplement, or companion, to a remarkable two-volume publication on the uses of aluminium in building by the Reynolds Metals Company which appeared in 1957—*Aluminium in Modern Architecture*. It contains data on 27 buildings erected since the first work went to press, and also précis of papers by technical experts presented at a Symposium on Aluminium in International Architecture held in West Berlin. The book is extremely well illustrated, designed and presented.

J. C. P.

Kirchen: Handbuch für den Kirchenbau, by Willy Weyres and (the late) Otto Bartning. 12 in. 448 pp. incl. illus. Bibliog. Index. 1959. Munich: Callwey. £6 10s.

How much richer today's church building programme in this country would have been if an English equivalent of *Kirchen* had been available during the past decade. This book gives German architects the ecclesiological and the liturgical background, the technical details and some of the basic inspiration, which are essentials if church building is to be relevant and vital and an Act of Worship in this century. To an English architect well versed in English ecclesiology, what at present passes for an English Liturgical Movement and the Instrumenta of English Worship, the book should be stimulating; but those not so versed should be very circumspect in using it as a crib, or to titillate a recalcitrant inspiration.

Kirchen is divided into three sections; the first devoted to Roman Catholic churches, the second to Protestant churches and the third to Instrumenta—covered with Teutonic thoroughness both in text and diagram. The introductions to the first and second sections are illustrated with diagrams, and each is followed by a lavish selection of photographs of recent churches in many countries. The eminent authors confine themselves to illustrating but one English church.

Many of the churches illustrated are comely 'good building'—exactly the position in the scale of architectural values which the average church should reach—in some the architect is seen to have greatly over-played his hand, and some are awful warnings of the vulgarity into which modern architecture so easily falls when merely selected as a 'style' for church building.

The illustrations underline the remarkable degree of integration of structure and furniture achieved in recent German churches. It may be that for us the importance of this excellent book is its stressing the need for a like integration of structure and furniture arising out of a deep understanding and a passionate acceptance of our particular Liturgical requirements.

GEORGE G. PACE [F]

Bauentwurfslehre 1959, by Ernst Neufert. 20th. edition. 12 in. 448 pp. incl. illus. Berlin: Ullstein Fachverlag. DM 58.

Like its 19 predecessors, *Bauentwurfslehre* 1959 is an encyclopaedia of basic information on every conceivable planning problem, the latest edition containing no less than 4,672 explanatory drawings and tables of data. Among building types receiving attention for the first time are motels, self-service shops, service stations, Cinerama theatres, and the various kinds of 'drive-in'. Tables for converting metrical weights and measures into their English equivalents are provided. Counting all editions, over two hundred thousand copies of this extraordinary work have been sold in Germany alone. Spanish, French and Italian versions

of the *Bauentwurfslehre* have long existed. An English one is promised.

English Romanesque Lead Sculpture, by George Zarnecki. 7½ in. 52 pp., 81 illus. Tiranti. 1957. 15s.

Minor English Wood Sculpture 1400-1550, by Arthur Gardner. 7½ in. 44 pp., 170 illus. Tiranti. 1958. £1 1s.

Although sometimes under ill-directed fire from specialists, for whom they are not intended, and from superior persons, who tend to judge the value of books by their bulk, Alec Tiranti's 'Chapters in Art' perform a useful service. They summarise authoritative information on subjects which can otherwise only be elucidated by laborious research. In the first (Volume 29), Dr. Zarnecki of the Courtauld Institute makes a further valuable contribution to the meagre literature on English Romanesque sculpture, on which he is now recognised as the supreme authority. In the second (Volume 32), Mr. Arthur Gardner is principally concerned with the little carvings adorning the bench-ends of churches, an entertaining branch of our folk art, to which other scholars have given little attention.

J.C.P.

Correspondence

ARCHITECTURE AND THE CHURCH

The Editor, R.I.B.A. Journal

Dear Sir,—A number of people have been in touch with me since you published in the June issue the report of the Architects' Conference held at Bossey in May, under the auspices of the World Council of Churches.

It appears that the statement by the Conference which was printed on page 279 of your June issue has aroused considerable interest, and a number of architects feel that some useful purpose could be served if a follow-up meeting or one day conference was held in London early in the new year. In order that such a possibility might be explored, I should be most interested to hear from any member of the Institute who is concerned with the problem of church design and who feels that the Bossey statement meets a present-day need.

Yours faithfully,

EDWARD D. MILLS, C.B.E. [F]
9-11 Richmond Buildings,
Dean Street, London, W.1.

A.B.S. POLICY ON MORTGAGES

Dear Sir,—I see from an advertisement in a recent architectural magazine that the A.B.S. Insurance Agency is prepared to offer loans to architects and their assistants on mortgage of '... suitable modern houses or bungalows of traditional construction.'

Apart from detesting the word 'bungalow,' I am suspicious of the words 'suitable' and 'of traditional construction.' What is implied? Has the A.B.S. sold us on

commission to the Philistines, or has it found a building society which, having read Mr. Baines' letter in the April issue, is prepared to adopt the enlightened approach?

Before we all start designing our Ideal Home perhaps the A.B.S. would care to say which is the case.

Yours faithfully,

S. G. E. SHIPMAN [A]

[The A.B.S. Insurance Agency Ltd. has made arrangements to meet members' requirements with life offices and building societies which are among the more liberal in outlook.]

[With the lifting of credit restrictions larger funds are available and the lending societies are interested in a wider range of properties than was recently the case.]

[With Government backing, a number of building societies make advances up to 95 per cent in certain cases. These facilities apply to pre-1940 houses bought for owner occupation and valued at not more than £2,500 (£3,000 in London). The A.B.S. Insurance Agency, Ltd., will supply details on request.]

THE KALENDAR

Dear Sir,—I would like to support Mr. Austin's complaint in the July issue regarding the R.I.B.A.'s refusal to give the address of more than one office in the Kalendar. I have three offices, and they are all of importance to me and to my partner, and the fact that the address of one only is published in the Kalendar is a very considerable handicap to us.

Yours faithfully,

A. GEOFFREY BAZELEY [F]
Geoffrey Bazeley and Barbary.

THE A.B.S. AND THE BUILDING EXHIBITION

Dear Sir,—The generosity of the Montgomery Family to the Architects' Benevolent Society is continuous, and this year they have again offered the Society a Stand at the Building Exhibition, where it is hoped to display the A.B.S. Christmas Cards, as well as information on the Society's work and particulars of an amusing competition in aid of its Old People's Homes at East Horsley.

To take advantage of this kind offer, the A.B.S. will need help for manning the Stand throughout the fortnight, and I am now appealing to members to join me in volunteering to help for at least one period (morning, afternoon or evening), which could be combined with a visit to the Exhibition. The dates are Wednesday, 18 November to Wednesday, 2 December, and the hours are from 10 a.m. to 6 p.m. on Mondays, Wednesdays and Saturdays, and to 8 p.m. on Tuesdays, Thursdays and Fridays. Up to 84 helpers will be needed to cover the whole time of the Exhibition, and offers of help, stating which day and time would be convenient, should be sent to Mrs. O'Sullivan, Secretary, The A.B.S., 66, Portland Place, London W.1.

I hope many members will do a good turn for the A.B.S. by volunteering to help on the Stand.

Yours faithfully,

(MISS) B. N. SOLLY [Hon. A.]
(Vice-President, A.B.S.)

Notes and Notices

NOTICES

Inaugural General Meeting, Tuesday, 3 November 1959 at 6 p.m. The Inaugural General Meeting of the Session 1959-60 will be held on Tuesday, 3 November 1959 at 6 p.m. for the following purposes:

To read the Minutes of the Tenth General Meeting of the Session 1958-59 held on 16 June 1959.

Mr. Basil Spence, O.B.E., T.D., A.R.A., A.R.S.A., President, to deliver his Inaugural Address.

To present the London Architecture Bronze Medal 1958 to Mr. David du R. Aberdein [F] for the T.U.C. Headquarters Building, a replica of the medal to a representative of the T.U.C., as the building owners, and a Diploma to a representative of Sir Robert McAlpine and Sons, the contractors.

To present the R.I.B.A. Award for Distinction in Town Planning to Mr. Noel Tweddell, T.D. [A].

(Light refreshments will be provided before the meeting.)

Members' Luncheon Room. A Members' Luncheon Room is now open on the 6th Floor and is run on a largely self-service basis. The price of luncheon for members and Students is 4s. and guests may be introduced. Luncheon service is available from Mondays to Fridays inclusive between 12 noon and 2 p.m. and there is a 'club licence'.

Luncheon vouchers, issued through Messrs. Luncheon Vouchers, Limited, will be accepted, as also will any vouchers issued privately by members in private practice to members or Students in their employment, if special arrangements are made.

Morning coffee and afternoon tea can be ordered. Pending the reinstatement of the Members' Room this service will be provided in the 6th Floor Luncheon Room.

Members and Professional Affixes. The Council's attention has been called more than once to the practice among some members of adding a string of letters of doubtful value to the affix indicating membership of the Royal Institute on their letter paper.

This is a matter in which the Council obviously cannot dictate to members, and must trust to their good sense. It should be obvious, however, that the affix of a chartered body of high standing is weakened in effect by the addition to it of a string of other mysterious designations some of which probably indicate no more than the payment of an annual subscription.

COMPETITIONS

Metropolitan Cathedral of Christ the King, Liverpool. The Liverpool Metropolitan Cathedral Committee invite architects who are British subjects, Commonwealth citizens or citizens of Eire wherever resident who are corporate members of the Royal Institute of British Architects or the Royal Institute of the Architects of Ireland or those in the United Kingdom whose names are on the Statutory Register of the Architects Registration Council of the United Kingdom, to submit designs in competition for the new Metropolitan Cathedral of Christ the King, proposed to be erected on a site on Brownlow Hill, Liverpool.

Assessors: The Most Reverend J. C. Heenan, D.D., Archbishop of Liverpool, Mr. Basil

Spence, O.B.E., T.D., A.R.A., A.R.S.A., President R.I.B.A., and Mr. David Stokes [F].
Premiums: £5,000, £3,000, £2,000.
Cost: £1,000,000.

Last day for submitting designs: 4 p.m. on 3 August 1960.

Last day for questions: 15 December 1959.

The conditions, which will be ready early in October, may be obtained on application to the Competition Secretary, Liverpool Metropolitan Cathedral Committee, 152 Brownlow Hill, Liverpool, 3. Deposit: £2. An applicant for the conditions must state his registration number.

Design of Shopping Centre and Adjacent Houses, Grangemouth. Last day for application for the conditions, 4 November 1959. Further particulars were given in the JOURNAL for August, page 367.

Civic Centre, Corby. Last day for submitting designs: noon, 21 December 1959. Full particulars were published in the JOURNAL for July, page 329.

County Offices, Taunton. Last day for submitting designs: 5.30 p.m. on 15 February 1960. Full particulars were published in the JOURNAL for July, page 329.

COMPETITION RESULT

New Town Hall, Milngavie

1. John Michael Bowley [A].
2. John D. Robertson, D.A., Dip.T.P. (Edin.) [A].
3. F. St.G. Higginson, D.A.(Edin.) [A].

GENERAL NOTES

R.A.I.C. Inquiry into Housing. The Hon. David J. Walker, Minister responsible for the operations of the Canadian Federal housing agency, Central Mortgage and Housing Corporation, has announced that arrangements have been completed for an inquiry by the Royal Architectural Institute of Canada into the design of residential areas. The inquiry will be assisted by a Federal grant not exceeding \$30,000 (authorised under Part V of the National Housing Act, 1954, which provides for Federal aid in investigations into housing conditions).

A committee of inquiry is to cross Canada seeking ways in which the new parts of cities and towns, which are certain to be built as rapidly as in the past, can be better designed for the millions who will live in them. Consumer groups, municipal bodies and all others involved in the formation of new communities have been invited to join. The R.A.I.C. committee consists of: Peter Dobush (Chairman), of Montreal, John C. Parkin [F], of Toronto, and Charles E. Pratt, of Vancouver.

Conference on Industrial Archaeology. The Council for British Archaeology has recently formed a research committee for the archaeology of the Industrial Revolution. The committee includes archaeologists, economic historians, geologists, architects, technologists, and others interested in surviving industrial remains of the 17th to the 19th centuries.

In order to focus attention on the possibilities and immediate requirements of research on this subject, a conference is being held on Saturday, 12 December at the London School of Hygiene and Tropical Medicine, London, W.C.1. Full particulars are available from the Assistant Secretary, Council for British Archaeology, 10 Bolton Gardens, London, S.W.5.

I.L.A. Design Centre. The Institute of Landscape Architects has set up a Landscape Design Centre for the criticism of students' work and the promotion of good landscape design. The first meeting will be held at the Institute, 1 Park Crescent, London, W.1, at 6.30 on 5 October, and those interested are invited to attend.

International Clean Air Conference 1959. The conference, which has been organised by the National Society for Clean Air to celebrate its Diamond Jubilee, is being held in the Seymour Hall, Seymour Place, London, W.1, from Tuesday 20 to Thursday 22 October.

Full details are obtainable from Mr. H. Kapps, Information Officer, National Society for Clean Air, Palace Chambers, Bridge Street, London, S.W.1 (Trafalgar 6838-9).

R. S. Reynolds Memorial Award. The American Institute of Architects has announced regulations for the Fourth Annual \$25,000 R. S. Reynolds Memorial Award for significant use of aluminium in architecture.

This international award is conferred annually on an architect who has designed a significant work of architecture, in the creation of which aluminium has been an important contributing factor.

Under the regulations, an architect may be nominated for the Reynolds Award by anyone—including himself or his firm. Nomination forms can be obtained from the A.I.A., 1735 New York Avenue, N.W., Washington 6, D.C., U.S.A., and should be submitted before 8 December 1959.

The Reynolds Award Jury selected by the A.I.A., will give preference to works of architecture completed during the last three years. But the Jury may acknowledge earlier work if it desires.

The Award, which may be given for any type of structure, was established three years ago by Reynolds Metals Company in memory of the founder, R. S. Reynolds, Senr. It is administered by the A.I.A.

In addition to the \$25,000 honorary payment, the recipient also receives an appropriate sculptured piece especially created by a prominent contemporary artist.

The 1959 Award was conferred on the firm of Yuncken, Freeman Brothers, Griffiths and Simpson, of Melbourne, Australia, for the Sidney Myer Music Bowl in Melbourne.

Harvard University. Advanced courses leading to one of three new master's degrees in Urban Design will be offered in the Harvard Graduate School of Design starting a year from this autumn.

The courses will be open to selected candidates who have demonstrated capacity in design as applied to improvement of the urban environment and who hold one of the professional degrees of the Graduate School of Design in architecture, landscape architecture, or city planning, or the equivalent.

The new programme will require a minimum of one year's study in residence at Harvard and will lead to the degrees Master of Architecture in Urban Design, Master of Landscape Architecture in Urban Design, or Master of City Planning in Urban Design, depending on the profession in which the candidate already holds his degree. The programme is under the general direction of Dean Sert.

A New School of Planning for Ghana. The Bureau of Technical Assistance Operations of the United Nations through the Secretary General has appointed Dr. H. Peter Oberlander [A] to advise the United Nations on the opportunities and problems involved in establishing a Regional Training Centre in

Community Planning and Development in Ghana. It will be Professor Oberlander's responsibility to advise the United Nations and through the United Nations the Government of Ghana on whether such a Centre ought to be established at this time in West Africa serving ultimately the entire region of rapidly developing new countries.

Professor Oberlander is Professor of Planning at the University of British Columbia, teaching in the School of Architecture as well as in charge of the Graduate Programme in Community Planning. Initially he has been asked to go to Ghana for a six weeks reconnaissance trip to evaluate the assets available in Ghana for training in urban and regional planning as well as the problems that graduates of such a programme will have to face in developing the resources of new countries.

R.I.B.A. Cricket Club

R.I.B.A. v. Club Cricket Conference, 26 August. The C.C.C. won by five wickets. The R.I.B.A. batted first, and were all out for 181 (J. Seward 53, C. A. R. Norton 27 n.o., F. J. Thomas 6 for 49). The C.C.C. made 182 for 5 (F. Micklethwaite 89 n.o., D. A. Stevens 3 for 40).

Obituaries

John Batty [F], died on 5 June 1959, aged 66.

Mr. H. Anthony Mealand [F], City Planning Officer, Corporation of London, writes:

'Mr. Batty started his architectural training in the office of Frederic Chancellor [F] at Chelmsford, at the same time attending the Chelmsford School of Art, to which he gained an Exhibition.

'Before commencing private practice in the City of London in 1928, he spent some time with the London County Council, H.M. Office of Works, and the L.M.S. Railway Architectural Branch. From 1914-19 he served with distinction as a machine gunner in "The Queens" London Regiment. In 1954 he was awarded the City and Guilds Insignia award for practical skill in architecture.

'During his 30 odd years of private practice he carried out many important works, principally of an industrial and engineering character. These included work for Colour Photographs, Acton, the rebuilding of the Isle of Man Steam Packet Company's premises at Douglas, the Standard Wharves premises, Wapping, and the Central Stores for the North Thames Gas Board, Denso Offices, Norwood; he also designed Manor Court, Southgate, a block of residential flats. His son, Mr. J. Geoffrey Batty [A], who was taken into partnership in 1953, is now continuing the practice.

'He gave a great deal of his time and energy to public service and was a member of the R.I.B.A. Practice Standing Committee until 1937 and had also served on the Salaried Members Committee.

'Elected to the Court of Common Council in 1937, he served the City well in many capacities, including the Chairmanship of the General Purposes Committee. His greatest work for the City was during his five years as Chairman of the Improvements and Town Planning Committee. His enthusiasm was such that he almost made it a full-time occupation. His name will always be associated with the scheme for the ennobling of the site of St. Paul's Cathedral on which he worked so hard to achieve a setting worthy of the City. In spite of his many duties he found time to be a member of the City and County Licensing Planning

Committee, Governor of Christ's Hospital, a Governor of Sir John Cass Foundation and Chairman of the Estates Committee, Governor of the Aldgate and All Hallows Exhibition Foundation and the Aldgate Freedom Foundation.

'As a man he was honest and forthright, stating his views fearlessly. He never spoke without one being aware of his sense of dedication and his deep knowledge of his subject.'

Samuel Beverley [F] died on 26 April 1959, aged 63.

Mr. Beverley received his training at Sydney Technical College, where he was awarded the Kemp Memorial Gold Medal, and Sydney University. He started practice in 1923 in partnership with Mr. F. T. Verity [F] in London. After Mr. Verity's death in 1937 he had continued the practice of Frank Verity and S. Beverley on his own.

The firm was responsible for many cinemas in London and the provinces, including the Plaza, Lower Regent Street, the Paramount Theatre, Tottenham Court Road, and in Newcastle, Manchester, Leeds and Birmingham, the Carlton Theatre, Haymarket, and the Palace Theatre in Bristol. Amongst other works were flats—Whitelands House—Kings Road, Chelsea, the Gestetner Building in the Euston Road and St. Christopher's Church, Hinkley Wood.

Walter Brand [Retd.A], died on 27 June 1959, aged 87.

Mr. Brand was the son of an Ipswich merchant and worked in his father's business before taking an architectural training. In 1889 he became articled to Mr. Brightwen Binyon and was later his assistant and studied at the Ipswich School of Science and Art. In 1891 he was awarded the bronze medal for measured drawings by the Department of Science and Art, South Kensington. Although he was compelled to return to his father's business for family reasons he continued with his studies and qualified as an Associate in 1895. He eventually started practice on his own account in Leicester. In association with Mr. John S. Corder he won first prize in a competition for a higher grade school for Ipswich in 1897 and in 1899 he was awarded first prize for a design for the Leicester Wholesale Market, which was opened in 1902.

This early success enabled him to build up a thriving practice in Leicester where he remained until his retirement in 1953. His work included churches, schools and individual houses, and more specifically the Robert Hall Memorial Chapel, Narborough Road, the Harvey Lane Memorial Hall, the Aylestone Baptist Church, and the Archdeacon Lane Memorial Church, Buckminster Road, the Alderman Sir Jonathan North School, and Daimler House for Messrs. Mantle and Boarland, all in Leicester. He was responsible for council schools at Botcheston and Kirby Muxloe and after the First World War was associated with the late J. C. Baines [A] in the design of housing schemes for the North Bridge Estate and the Wyggston Housing Estate, Narborough Road, Leicester. Of his houses perhaps the most characteristic examples of his work are 'Highfield' at Hunt's Hill, a stone Charnwood Forest dwelling; 'Berrystead' at Barkby; 'Manor Lodge' at Desford; Carter's Rough, Groby; and the 'Manor House', Cossington.

Mr. Brand was a past President of the Leicestershire and Rutland Society of Architects from 1929 to 1931 and had represented that body on the Council and the Allied Societies' Conference.

On retirement from the Hon. Treasurership of the Leicester Society of Artists in 1957 he was presented with an illuminated scroll in recognition of 32 years' service.

Owen Hanworth Cockrill, T.D., A.M.T.P.I. [A], died on 3 April 1959, aged 76.

Mr. Cockrill was articled to his father, Mr. J. W. Cockrill [A], Borough Surveyor of Great Yarmouth. He started private practice on his own account at Southend-on-Sea, Essex, in 1923. A few years before his death he had taken Mr. Dennis Eve [A] into partnership.

Among his principal works were the church of St. Cedd, Southend, church halls at Eastwood, Hadleigh and Westcliff, a church school at Prittlewell and several vicarages in Essex; also business premises, houses and the layout of private housing estates in the Southend area.

During the First World War he served with the Royal Engineers, attaining the rank of Lieut.-Colonel and he served with the R.A.F. in the Second World War.

Mr. Cockrill was President of the Essex, Cambridge and Hertfordshire Society of Architects from 1934 to 1935 and had represented that body on the Allied Societies Conference and Chairman of the Southend Chapter from 1936 to 1937.

Harry Stuart Goodhart-Rendel, C.B.E., Mus.B. (Cantab.), M.A.(Oxon.), F.S.A. [Past President], died on 21 June 1959, aged 72.

Mr. Goodhart-Rendel was educated at Eton and Trinity College, Cambridge, where he studied music with Sir Donald Tovey. He began his architectural training with Sir Charles Nicholson, Bart., and set up in practice in London in 1910. For a time he worked in St. Raphael, France. In 1930 he entered into partnership with Mr. H. Lewis Curtis [F] and in 1945 Mr. F. G. Broadbent [F] joined the partnership.

Among his principal works and in addition to those mentioned by Mr. Betjeman below were Princes House, North Street, Brighton, and the Queen Elizabeth Hospital for Children, Banstead Wood. His church work also included the Holy Spirit, Ewloe, North Wales; St. John's, Upper St. Leonards-on-Sea; St. Cecilia, North Cheam; the Sacred Heart, Cobham; the John Fisher School Chapel, Purley; Holy Trinity Church, Dockhead; and the Franciscan Friary Church, Crawley.

Mr. Goodhart-Rendel had been closely associated with the R.I.B.A. throughout his career. Starting in 1926 he served for many years on the Council and the Executive Committee and was Vice-President from 1933 to 1935 and President from 1937 to 1939—then the youngest architect to have held that office. He was a past Chairman of the Art and Literature Standing Committees, the Public Relations Committee and the British National Committee of the I.U.A., and a past President of the Franco-British Union of Architects. He had also served on many other committees including the Board of Architectural Education, Thames Bridges Conference, R.I.B.A. Reconstruction, Co-Ordination, Sessional Papers, and Advisory Council of the National Buildings Record. He was President of the A.B.S. during his term of office as President, R.I.B.A., and since 1940 its Hon. Treasurer.

From 1933 to 1936 he was Slade Professor of Fine Art, Oxford University, and from 1936 to 1938 was Director of the Architectural Association School of Architecture, having previously been President of the A.A. (1924-25). He had also been Vice-President of the Royal Academy of Music since 1953, a governor

of Sadler's Wells since 1934, and President of the Guild of Catholic Artists and Craftsmen from 1946 to 1952 and of the Design and Industries Association from 1948 to 1950, and a member of the Advisory Committee on Buildings of Special Architectural or Historic Interest, Ministry of Housing and Local Government since 1945.

His duties at Caterham Barracks during the Second World War induced him to write *The Squad Drill Primer*. Other publications include a Monograph on *Nicholas Hawksmoor* in the Masters of Architecture series, *Vitruvian Nights, Fine Art, How Architecture is Made, and English Architecture Since the Regency*, as well as numerous articles on architecture and other subjects. He was also the author of several light musical compositions.

The JOURNAL is indebted to MR. JOHN BETJEMAN [Hon.A.], for the following appreciation. The interpolations are by MR. H. LEWIS CURTIS [F.], a partner of the late Past President.

'H. S. Goodhart-Rendel was a man of many parts. He was an only son who inherited the entailed riches of his maternal grandfather Lord Rendel. He could, if he had wished, have settled down to the life of a country gentleman in his fine house of Hatchlands, East Clandon, Surrey, which he gave to the National Trust and on his large estates in the South of France. He was an exquisite pianist and at Cambridge took the degree of Bachelor of Music and studied under Sir Donald Tovey. In the 1914 war he served in the Grenadier Guards and was devoted to the Brigade and prepared for it detailed designs for the restoration of the Royal Military Chapel at Wellington Barracks and the Memorial Cloister.

[He also served in the Guards in the last war—training recruits and guarding aerodromes in the blitz.]

'People are praised for overcoming poverty. They should also be praised for overcoming the equally great obstacle of riches and a diversity of talents. From all the choices before him, Hal Goodhart-Rendel selected architecture as his vocation and pursued it with conspicuous success. His autobiography, which he was writing at the time of his death and of which he had completed six chapters, shows the growth of architectural appreciation from childhood in one who early knew he wanted to be an architect. It is much to be hoped that, incomplete as it is, it will be published for it should be to architects what Wordsworth's "Prelude" is to poets, a study of the growth of a mind—a growth not concerned with theories of architecture but with visual impressions made first by various shapes and materials and then by the work of individual architects and periods of architecture. In this autobiography he relates the buildings he describes to the life of the people for whom they were built.

'When he was in his teens some furniture was made from his designs for his own use. After leaving Cambridge he studied under Sir Charles Nicholson for whose work and methods he always had great admiration, to whom he always referred as "my master".

'His earliest works executed between 1909 and 1914 were cottages at East and West Clandon, West Horsley, Shalford Common, Englefield Green, at Burton Manor, Cheshire, and in Hertfordshire. He built in the local materials giving his buildings an individual look, and taking great interest in roof construction and coverings.

[His interest in roof construction arose from his determination whenever in any way possible, to give a church a fireproof roof, having in mind the long sad list of churches destroyed by fire in the roof.]

'At this time he started what became a large practice of remodelling country houses notably at Bagshot Park for H.R.H. the Duke of Connaught; Langham House, Rutland; Idsworth, Hants; and Stoke College, Suffolk. In 1907 he designed the façades of Clive Buildings, Calcutta, an office block. In 1913 he made a delicate restoration of Idsworth Church, Hants, retaining the box pews and Georgian fittings. About this he wrote: "The small panel of grisaille glass in the east window, designed and executed by A. K. Nicholson, was given by me in the hope that it would prevent any heavier glazing of the remainder"—a characteristic example of his generous care over detail and texture.

'After the 1914 war his country house practice continued and he did work of alterations of which the most extensive were Tetton House, Taunton (1924-26) and Bessborough House, Co. Kilkenny (1926-30) and the redecoration of Fishmongers Hall, London, in 1926.

[Possibly the works at Langham Old Hall including the new stables were more important than Bessborough.]

'He was by then doing learned essays in the Regency style before that period had come into popular favour. In the South of France he built four villas and enlarged one church at St. Raphael (Var) and made extensive alterations to another at Valescure (Var). In 1929 he designed Hay's Wharf head offices on the Southwark bank of the Thames and adorned its river façade with sculpture in faience by Frank Dobson.

'During the 1930's and after the last war he was largely engaged on church work. His church of St. Wilfrid, Brighton, designed in 1932 with its beautiful use of brickwork, noble proportions and skilful use of a steeply sloping site, rightly excited much admiration and comment. It was the harbinger of many churches by other architects who were to throw off the fetters of the Perpendicular Revival. With the work of Bodley and his followers Goodhart-Rendel had little sympathy. Another remarkable church showing his perennial interest in roof construction is St. Mary's, East Hounslow (1937-40).^{*} Three examples of restoration of churches bombed by Germans give an idea of the range of Goodhart-Rendel's taste and sensibility. St. Mary's, Bow, in East London, was a small village church of Middlesex type much ruined by cheap and insensitive Victorian restoration. Goodhart-Rendel gave a Georgian brick top stage and cupola and porch to the old stone tower. Nash's church of All Souls, Langham Place, he restored to its late Georgian character, even to the extent of finding ground glass and borders the colour of beer for the windows. His last work was the repair of Street's great brick church of St. John the Divine, Kennington, where he went to great trouble to put back all Streetian furnishings, designing new ones in Street's manner when these were missing and reverting to Street's manner of glazing church windows. Near the church he designed a house and cottage for the Wantage Sisters in brick which are what Street would have designed in his best and most modest manner had he been asked to build such dwellings in South London.

[I think by far the most interesting design he made for a church will prove to be that now building at Dockhead. The church in the Marylebone Road may prove even better but the building of that will hardly start within this year.]

'Besides Church of England buildings, some of Goodhart-Rendel's finest work was for Roman Catholic churches. He himself had been brought up in a rather arid low church

^{*} Built 1952-55.

atmosphere, reacted in favour of High Church—he built the Vicarage and north extra aisle of St. Mary's, Graham Street, London—then joined the Roman Catholic Church. He always remained friendly to Anglicans. The work in which he took greatest pride and which will undoubtedly be the finest of his many achievements, was the Abbey Church for the Benedictine Monks of Prinknash. This Community was originally an Anglican one on Caldey Island and in 1913 the majority of the Monks submitted to the Pope. The plans for the great Abbey Church in Goodhart-Rendel's bold "stripped classic" style are worked out in detail. A photograph of the model showing how it will look in its splendid austerity on the slope of the Cotswolds below Painswick used to be the only photograph in his room at his London house where he sat in his last illness. His remains are buried in the foundations of this great Abbey Church which now is beginning to rise around them.

[No account of Goodhart-Rendel's work is really complete unless it mentions his constant pre-occupation to rationalise. For him every plan must arise from a clear-cut programme of needs, all materials must be chosen for reasons of use, and above all whatever is designed must be proportioned down to the last detail, by some geometric or arithmetic system. In his later years at least, no drawing beyond some slight outline, would appear before a long series of calculations had been made and the system was applied with equal rigour whatever the style of the design.]

'Goodhart-Rendel was interested in architects as individuals. He made a point of getting to know members of the older generation of architects and learning from them their methods and opinions of the work of other architects and of the men who trained them. Sir James Knowles, the founder of the "Nineteenth Century", friend of Tennyson and architect of the Grosvenor Hotel, and Leicester Square, London, and Aldworth, Surrey, he met through his relations the Gladstones. This may have been the beginning of his interest in architectural personalities. It resulted in a true appreciation of the 19th-century architecture, ecclesiastical and secular. His card index of Victorian churches was completed long before people were taking these buildings seriously. By constant visiting, photographing with a stereoscopic camera and making notes, often wildly funny when describing odd buildings, he not only amassed a deeper knowledge of the subject than anyone else but also discerned the good from the bad; he was amongst the first to point out the strength and originality of Butterfield and the weakness of Sir Gilbert Scott. He was not interested in "trends" and "pioneers", holding that the architect who was a true artist and craftsman was more worth considering than a heavier handed "pioneer". His knowledge and shrewd criticism was always generously at the disposal of all who applied to him for it. It was imparted in fascinating illustrated lectures notably those he gave as Slade Professor at Oxford. Some of these formed the basis of his book *English Architecture since the Regency* which will never be surpassed for learning, wit, and true interpretation of the changes of taste from 1840 to 1930. He served on the Georgian Group and he was a founder of the Victorian Society and was on its committee. He also wrote a monograph on Hawksmoor. The best tribute to Goodhart-Rendel is paid by Sir Kenneth Clark in the "Letter to the Publisher" in the second edition of the *Gothic Revival* in which he writes (Page 6):

"No one has equalled the learning, urbanity and critical insight of Mr. Goodhart-Rendel,

the father of us all, whose kindness to his unworthy children is made more remarkable by the fact that he can see through all their pretences."

'Hal Goodhart-Rendel was tall, thin, brown-eyed and with a pale complexion. He looked iller and more lethargic than he was and often surprised one by his energy and quickness of mind. He had beautiful manners and was a most hospitable host. He had many friends. To those outside the circle of his interests, he may have seemed a lonely figure, although he was so approachable. He was modest about his own work and kind about that of his contemporaries and juniors. He is quite irreplaceable.'

MR. HOWARD V. LOBB, C.B.E. [F], Hon. Secretary, Architects' Benevolent Society, writes:

'Any reference to his life and work would be incomplete if they did not mention his work for the A.B.S., for whom he has been the Hon. Treasurer for 21 years. In Councils and Committees, at which until his recent illness he was a regular attendee, his kindly understanding of the needs of our beneficiaries and the need to respect their wishes and confidences in adversity was a most salutary experience to those who worked with him.

'He worked hard and had a keen interest in the establishment of Frenchlands Hatch at East Horsley, and the site on which these Homes are built may be said to have been selected by him. We, the Officers and Council of the Architects' Benevolent Society, and those in need have all lost a friend.'

James Cecil McDougall, B.Sc., B.Arch. (McGill), F.R.A.I.C. [F], died on 20 April 1959, aged 73.

Mr McDougall received his training in the office of Edward and W. S. Maxwell, Montreal, Canada, and later studied at the École des Beaux Arts, Paris. He graduated in Architecture and Engineering from McGill University.

In 1914 he started practice in Montreal in partnership with Mr. H. L. Fetherstonhaugh [F] and continued on his own account from 1927 until he was joined in partnership in 1947 by Mr. J. Roxburgh Smith [F] and Mr. Robert P. Fleming [A]. Messrs. Fleming and Smith are now continuing the practice.

During the partnership with Mr. Fetherstonhaugh his work included the Montreal General Hospital Nurses' Home, the Arts Building at McGill University, the Bovril Building, Montreal, and numerous houses and industrial buildings. After 1927 he was responsible for the Private Patients' Pavilion at the Montreal General Hospital, the Jewish General Hospital, Verdun Protestant Hospital Nurses' Home and Porteous Pavilion, the Alexandra Hospital Nurses' Home, the Anglo-American Trust Co. offices, the Administration Building for the Montreal Protestant School Board, the Royal Edward Laurentian Hospital, Montreal and Ste-Agathe. Since 1947 he had been concerned with his partners on the Montreal General Hospital and Nurses' Home, additions to the Jewish General Hospital, and the Physical Sciences Centre, New Redpath Library and Engineering Building at McGill University.

Mr. McDougall was a past President of the Province of Quebec Association of Architects and had been awarded their Medal of Merit. He had been a City Councillor of Montreal and a member of the City's Town Planning Committee.

Ronald Francis Orfeur, B.Sc.Eng. (Lond.) [A], who was R.I.B.A. Alfred Bosson Silver Medallist for 1933, died on 2 May 1959, aged 63.

Mr. Paul Mauger, M.T.P.I. [F], of Messrs.

Paul Mauger, Gavin, Mathers and Mitchell [F/A] writes:

'Ronald Orfeur, serving with the Royal Marine Engineers in the 1914-18 war, lost a leg and an eye by enemy action in France while he was going up the lines. His subsequent career is a story of rare gallantry and courage in the face of these disabilities and the recurrent bouts of illness which arose from them.

'By working on C. G. Stillman's staff at Chichester, as he did before joining us in 1938, he had the open sea at hand for sailing his own boat, and this hobby may suggest to those who did not know Ronald, something of his calibre and spirit.

'The real preoccupation of his career was research into the origin of pottery curves. He won the A.A. Essay Prize in 1924 (C. F. A. Voysey being assessor) with his first published work on the subject—"Curves in Pottery and Architecture". He took a London University mathematics degree in the early '40's to enable him to pursue this same study. His results were published in the R.I.B.A. JOURNAL under the title "The Geometrical Origins of Certain Curves in Pottery and Architecture" as recently as November 1955. The determination with which he pursued this particular work may be judged by the fact that W. R. Lethaby, when approached by Ronald for advice, had discouraged him from spending more time at it. Having worked out an explanation of the origin of the Greek shapes, he was ever looking for an opportunity of using them in his architectural work.

'He was articled before 1914 to John Corder of Ipswich and qualified after three years at the A.A. in the early 20's. He worked with Sir John Burnet, and then after a period of illness came his time in West Sussex and with us. During the Second World War he worked with Austen Harrison on Nuffield College, Oxford, and in charge of Government work at Mexham.

'Since the war he was with Easton and Robertson on early work for the Shell Building.

'He had a remarkable gift for co-ordination and brought an essentially reasonable approach to ideas and people: this was a help in organising specialist work on large buildings—a service for which he had a rare flair.

'He will be remembered by many as a cheerful, modest and gallant friend.'

Guy Pemberton [F] died on 6 March 1959, aged 76.

Mr. Pemberton studied at the Birmingham School of Art and was articled to Mr. F. B. Osborn [F] of Birmingham. He later worked in the office of Sir Arthur Blomfield and Sons [FF] in London. In 1906 he started private practice in Birmingham as partner in the firm of F. B. Osborn, Pemberton and White [F/L]. Mr. Pemberton subsequently moved to Stratford-on-Avon and Chipping Campden and in 1945 Mr. T. R. Bateman [A] joined him in partnership in Evesham. Since 1950 he had been in practice at Broadway, Worcs.

Mr. Pemberton had been concerned with the restoration of all properties belonging to the Shakespeare Trust at Stratford-on-Avon. He was Architect to Holy Trinity Church, Stratford, until 1930, and Diocesan Surveyor from 1912 to 1926. Domestic architecture was his greatest interest and he restored many Cotswold houses in Broadway, Chipping Campden, etc. He also restored Stanway House for the Earl of Wemyss, and Chastleton House, Oxon. He improved and restored almshouses at Chipping Campden. In 1944 he was appointed architect for post-war housing for the Rural District Councils of North Cotswolds, Evesham, Upton-on-Severn and Tewkesbury.

Sir Alfred Ernest Shennan, M.A., J.P. [F], died on 6 May 1959, aged 71.

Sir Alfred, who was the son of a builder, was a native of Birkenhead, where he served a three-year apprenticeship in the joinery trade, and then became an articled pupil with a firm of Birkenhead architects. He went to Liverpool as an assistant under the late Leonard Nagington. Mr. Nagington later took him into partnership, but after the former's death towards the end of the First World War, Sir Alfred continued the practice on his own account. The practice flourished to such an extent that he came to employ a large staff. He ultimately took Mr. R. Ainslie Threadgold [F] and Mr. R. Malcolm Robertson [F] into partnership and they are now continuing the practice of Sir Alfred Shennan and Partners.

The practice is a general one and includes schools, churches, housing, theatres and cinemas, factories and industrial buildings, shops, offices, banks, hotels and licensed premises in the Liverpool area and beyond. Sir Alfred was responsible for many churches in Merseyside, including St. Matthew's, Birkenhead, and St. Aidan's, Liverpool, and alteration and rebuilding to Walton Parish Church, Mossley Hill Parish, and St. Paul's, Stoneycroft. He also was architect for a large number of the early cinemas, and on behalf of the Westminster Bank, was architect for branches at Dingle, Crosby, West Kirby, Bromborough, Blundellsands, Birkenhead and Oswestry.

But Sir Alfred was also a leading figure in the civic and administrative life in Liverpool. He was elected to Liverpool City Council in 1920, created a city magistrate in 1933 and a year later was elected an alderman. For nearly 20 years he had been the leader of the Conservative Party on the Council. He had helped to inspire the building of the Mersey Tunnel and was for some years Chairman of the Tunnel Joint Committee and he had also presided over the Finance Committee, the Merseyside Co-ordination Committee, the Civil Defence, Emergency, Parliamentary and Special Salaries Committees, and he was also Chairman of the Lancashire Industrial Development Association. It was largely through his efforts that Liverpool's industrial estates were built up; and it was on a mission to the United States in 1953 to persuade American industrialists to set up factories or branches on Merseyside that Sir Alfred had his first breakdown in health which led to his retirement from the City Council in 1956.

His support of the Royal Liverpool Philharmonic Society during its early years helped to ensure the stability for its orchestra which is envied by every other musical organisation in the country.

Sir Alfred was made an Honorary M.A. of Liverpool University in 1940, presented with the freedom of the City of Liverpool in 1946 and knighted in 1952.

Robert Wemyss Symonds, F.S.A. [F], died on 5 September 1958, aged 68.

Mr. Symonds was educated at St. Paul's School. He was Consultant Architect for the rebuilding of the Middlesex Hospital in 1931-34, and for St. Swithin's House, built after the war on the site of the Salters' Hall in the City of London.

Early in life he acquired an extensive and minute knowledge of English furniture which was revealed in his numerous books on the subject, *The Present State of Old English Furniture*, his first, published in 1921, which struck a blow at the fakers, who were making a good living out of the innocence of collectors, *Old English Walnut and Lacquer Furniture* (1922), *English Furniture from Charles II to*

George II (1929), two monographs on Chippendale designs, and *Furniture-Making in 17th and 18th Century England* (1955). He had also developed a no less sensitive and scholarly interest in the design of clocks which appeared in *Masterpieces of English Furniture and Clocks* (1940), a *History of English Clocks* for Penguin Books (1946), and a biography of Thomas Tompion the great Restoration horologist. He had also made many contributions to English and American periodicals on architectural and antiquarian subjects.

Henry William Tompkins [F], died on 21 January 1959, aged 94.

Mr. Tompkins' early training was received in South Africa. He set up in private practice in Melbourne, Australia, in 1898 in partnership with Mr. Frank B. Tompkins. Mr. P. M. Shaw was admitted to partnership in 1946.

Among Mr. Tompkins' principal works was the first steel frame building to be erected in Melbourne (1912). Other work included departmental stores, city buildings, newspaper offices and buildings of a commercial character.

Mr. Tompkins was primarily responsible for the formation of the Royal Australian Institute of Architects, and was a past President of the Royal Victorian Institute of Architects and also of the Federal Council before the R.A.I.A. was formed. He had been Mayor of Kew, Victoria.

Mrs. Maud Amy Margaret White, M.B.E. [A], died on 26 May 1959, aged 68.

Mrs. White (née Wall), served as a Chief Officer in the W.R.N.S. during the First World War and was awarded the M.B.E. (Military Division) in 1919.

After the war she studied at the Liverpool School of Architecture. She was elected an Associate in 1926 and was the first woman architect to be employed by the L.C.C.

In 1928 she married Captain John White of Temple Cowley and moved to Oxford. After her husband's death in 1934 she entered into local government and was elected to the Oxford City Council and was Mayor from 1942 to 1943 and became an Alderman of the City in 1952. She retired from the Council on medical advice three years later.

Members' Column

This column is reserved for notices of changes of address, partnerships vacant or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. Bernard Charles Adams [A], formerly Assistant County Architect with the County Council of Kent, has now taken up his appointment as Deputy County Architect of Hertfordshire.

Mr. P. G. D. Brewer [L] has resigned from the post of Supervising Architect with the South Australian Housing Trust, Adelaide, to take up the appointment of Senior Architect with the Capital Development Commission, Canberra. He will be pleased to receive trade literature, etc., addressed c/o P.O. Box 373, Canberra City, Australian Capital Territory.

The University of Leeds have elected **Dr. W. A. Singleton** [F] as Hoffmann Wood Professor in succession to Professor J. M. Richards [A].

Mr. George Brian Smith [A] has resigned from the post of Architect, P.W.D., Ghana, and has been appointed Senior Architect, Ministry of Education, Kingston, Jamaica, where he will be pleased to receive trade catalogues, particularly related to school building.

Mr. Ronald Edward Walker [A] has been appointed Chief Architect to Messrs. Threlfall's Brewery Co. Ltd., 21 Trueman Street, Liverpool 3.

PRACTICES AND PARTNERSHIPS

Messrs. J. Stanley Beard, Bennett and Wilkins [F/L/A] have taken **Mr. H. C. Lightowler** [A] into partnership under the style of **Beard, Bennett, Wilkins and Partners** at 101-3 Baker Street, London, W.1.

Mr. Michael Burrell [A] has commenced private practice at The Corner, Lechlade, Gloucestershire (Lechlade 375), where he will be pleased to receive trade catalogues, etc.

Mr. W. E. Cousins [A] has joined **Messrs. Christopher Gotch and Associates** [A] in partnership under the style of **W. E. Cousins, Christopher Gotch and Associates** at their new address at 343A Finchley Road, London N.W.3 (Hampstead 8226).

Mr. Roy Eggleston [A] has started private practice at 2 Tunstall Road, Sunderland, where he will be pleased to receive trade catalogues.

The association between **Mr. Louis Erdi** [F] and **Mr. Ronald J. Rabson** [A] has been extended to partnership under the style of **Erdi and Rabson** at 27 Knightbridge Street, E.C.4 (City 2639 and 2630) and 86 Edgware Way, Edgware, Middlesex (Stonegrove 6686).

The partnership between **Mr. Cedric Firth** [A] and **Mr. Ernst Plisike** under the style of **Plisike and Firth** has been dissolved by mutual consent. **Mr. Plisike** is now practising from Manchester Unity Oddfellows Building, 217 Lambton Quay, Wellington, New Zealand, and **Mr. Firth** is practising from Massey House, 126-132 Lambton Quay, Wellington, N.Z.

Mr. John G. Fryman [A] has commenced private practice at Portals, Ferry Lane, Medmenham, Bucks (Hambleden 381), where he will be pleased to receive trade catalogues, etc.

Mr. S. Kruss [A] has taken **Mr. J. J. Stein** [A] into partnership under the style of **Kruss and Stein** at 601-2 Pier House, Heerengracht, Cape Town, South Africa.

Mr. R. L. Warren, M.C. [A], **Mr. Denis Shaw** [A] and **Mr. Edwin Bellears** [A] have commenced practice under the style of **Castle Mill Architectural Partnership** at 146 Mansfield Road, Nottingham (Nottingham 53063) and Studio, Linby, Notts. (Hucknall 3599).

Mr. J. Fletcher Watson [F] has taken **Mr. G. A. Marsh** [A] into partnership at Pulls Ferry, The Close, Norwich, and also at the new office at 3 Old Barrack Yard, Knightsbridge, London, S.W.1 (Belgravia 3462), where trade catalogues will be welcome.

CHANGES OF ADDRESS

Messrs. Victor Bloom and Partners [AA] have moved their offices to 12 Gloucester Place, London, W.1 (Hunter 2069).

Mr. Joseph J. A. Caunt [A] has changed his address to Mulberry Cottage, 42 West Street, Wilton, Wilts (Wilton 3257).

Mr. Hugh Cadwron [A] has changed his address, to 20 Chesfield Road, Kingston upon Thames, Surrey.

Mr. Edward Craven [A] has changed the address of his Stamford office to 15 Barn Hill (Stamford 3315). He wishes representatives to call and literature to be sent to his Lincoln office at 11A St. Mary's Street (Lincoln 27671).

Messrs. W. E. and E. M. Cross [F/A], of The Studio, Osterley Road, Isleworth, Middx., have changed their telephone number to Isleworth 4585-6.

Mr. P. W. T. Elford [F] has changed his address to 1, St. Andrew's Street, Plymouth.

Messrs. George, Trew and Dunn [AA] have changed their address to 50 Eastbourne Terrace, London, W.2 (Paddington 6611).

The address of the County Architect to the Somerset County Council, **Mr. R. O. Harris** [F], has been changed to County Architect's Department, The Crescent, Taunton.

Mr. J. B. Holt [A] has changed his private address to 19 Robert Adam Street, London, W.1.

Mr. J. O'Hanlon Hughes [F] has changed his address to Ely Corner, 149 Lower Baggot Street, Dublin.

Mr. Donald W. Insall [A] of 3 Lyall Street, Eaton Square, London, S.W.1, has opened a branch office at 11 Park Place, Bristol 8 (Bristol 27830).

Mr. A. E. James [A] has changed his address to Messrs. James Cubitt and Partners, P.O. Box 813, 4th Floor, M.C.A. Building, 67 Ampang Road, Kuala Lumpur, Malaya.

The address of **Mr. S. G. Kamath** [A] is now Assistant Town Planner and Architect, New Secretariat, Baily Road, Patna, Bihar, India.

Mr. R. W. Kenning [A] has changed his address to 'Bayith', Malpas Road, Matlock, Derbyshire (Matlock 589).

Mr. H. E. Mate [A] has changed his address to 4 Carlton Lane, Rothwell, near Leeds.

Mr. J. S. Middleton [A] has changed his address to 35 Hillside Drive, Middleton, Lancaster.

Mr. P. G. Nash [A] has changed his home address to 913 Crawford Place, Fort William, Ontario, Canada.

Mr. B. J. Russell [A] has changed his address to c/o Ministry of Works, District Office, Sydney Street West, Wellington, New Zealand.

Messrs. Scott and Clark [A] of Regent Chambers, Wednesbury, Staffs, have now opened a branch office at the Bull Stake, Darlston (James Bridge 2138), where they will be pleased to receive trade literature.

Messrs. Smyth and Cowser [FF] of 31 College Gardens, Belfast, Northern Ireland, have opened a branch office in Belfast Bank Buildings, Coleraine, County Londonderry, where their architect in charge, **Mr. T. M. Gray** [A], will be pleased to receive trade literature.

Mr. Gordon Steele [A] is now practising from Cheyneys Lodge, Ashwell, Baldock, Herts. (Steeple Morden 210), where he will be pleased to receive trade publications.

Mr. R. D. Walshaw [A] has changed his address to 2 Fulmar Road, Brickhill, Bedford.

Messrs. Harry Webster (Harry Webster [F], H. H. Patefield [L] and G. V. Robertshaw [A]) have changed their address to 13 Blenheim Terrace, Leeds 2.

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Partnership wanted in established London practice by Associate with 20 years' experience in London. Good references. Capital available. Box 45, c/o Secretary, R.I.B.A.

Associate (39), with 17 years' varied experience including eight years as principal on own account, seeks partnership with older member wishing to retire gradually from practice. Preferably eastern counties north of London. Some capital available. Box 75, c/o Secretary, R.I.B.A.

Associate (36) wishes to purchase practice, preferably in the south, on gradual retirement of principal. Adequate funds available. Box 80, c/o Secretary, R.I.B.A.

Associate (42), 14 years' varied experience, wishes to contact member in the Portsmouth or Southampton district contemplating retirement with a view to negotiate purchase of small practice over two or three years. Capital available. Box 81, c/o Secretary, R.I.B.A.

The Royal Institute of British Architects, as a body, is not responsible for statements made or opinions expressed in the JOURNAL.

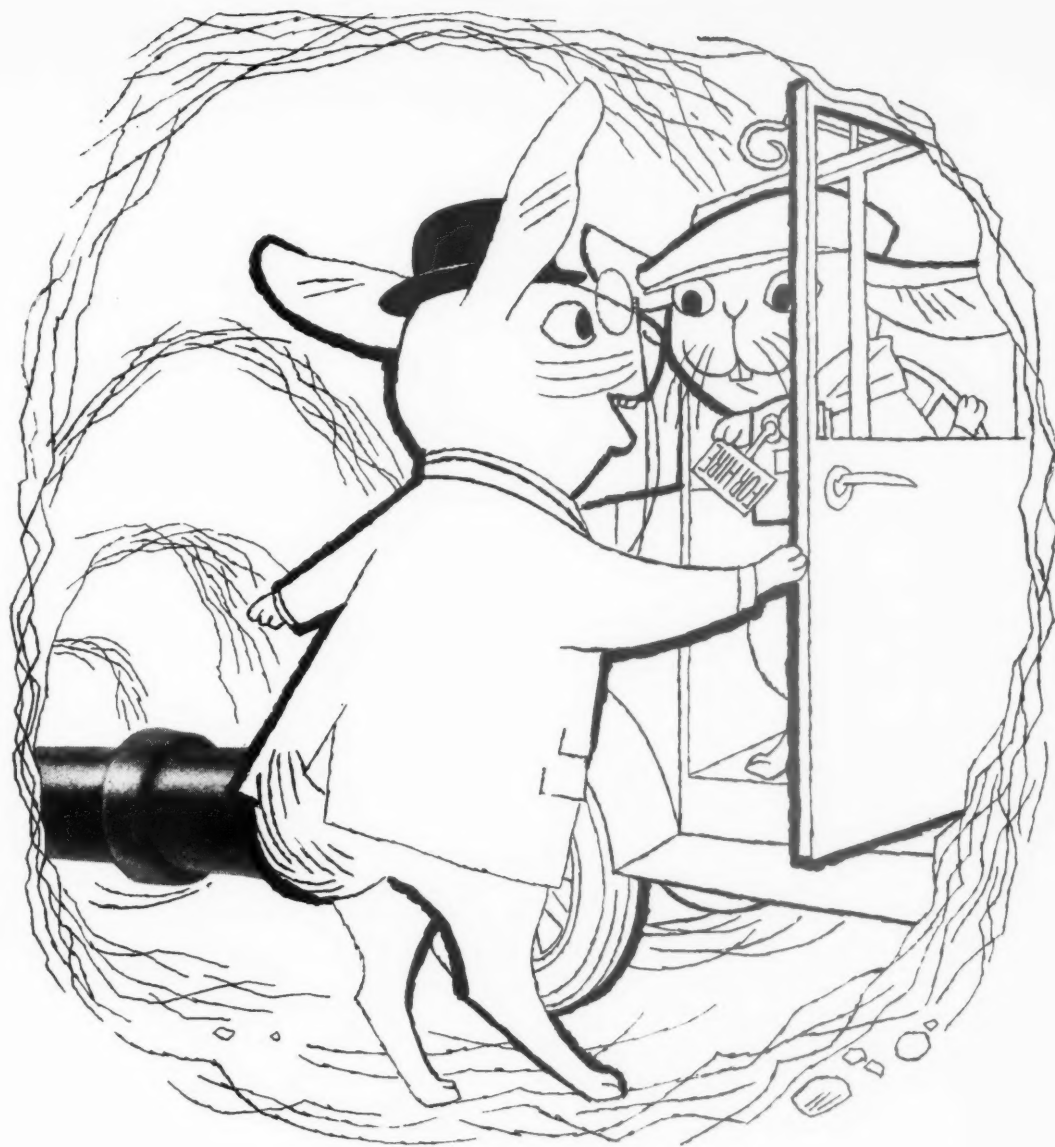


CAR INSURANCE

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'Your Honour—', said the taxi-driver.

'Yes yes, what is it, man?' said the Baron.

'It's not moving', said the driver.

'Not moving?' said the Baron. 'A pipe with such eminently estimable characteristics? You philistine! I find it intensely moving!'

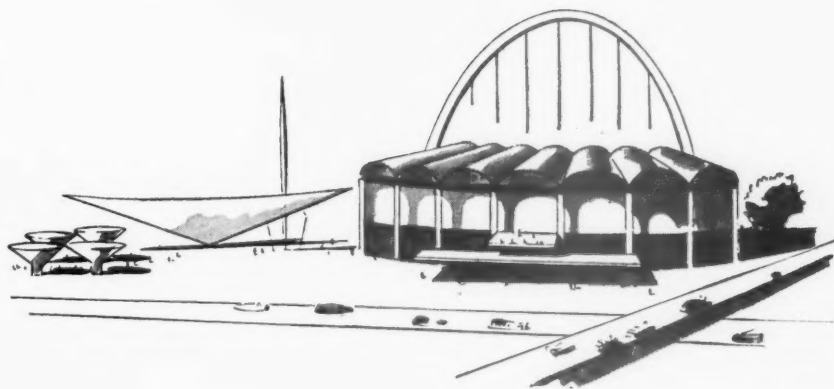
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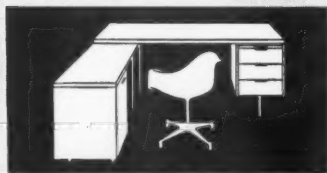


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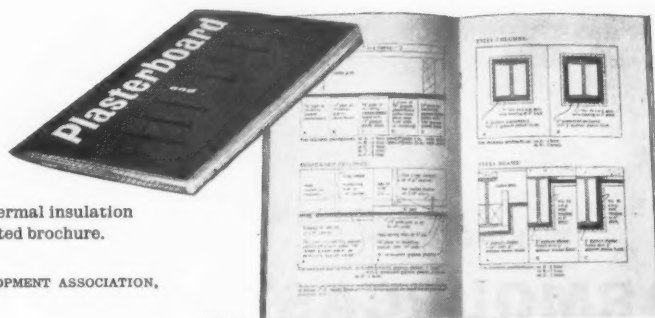
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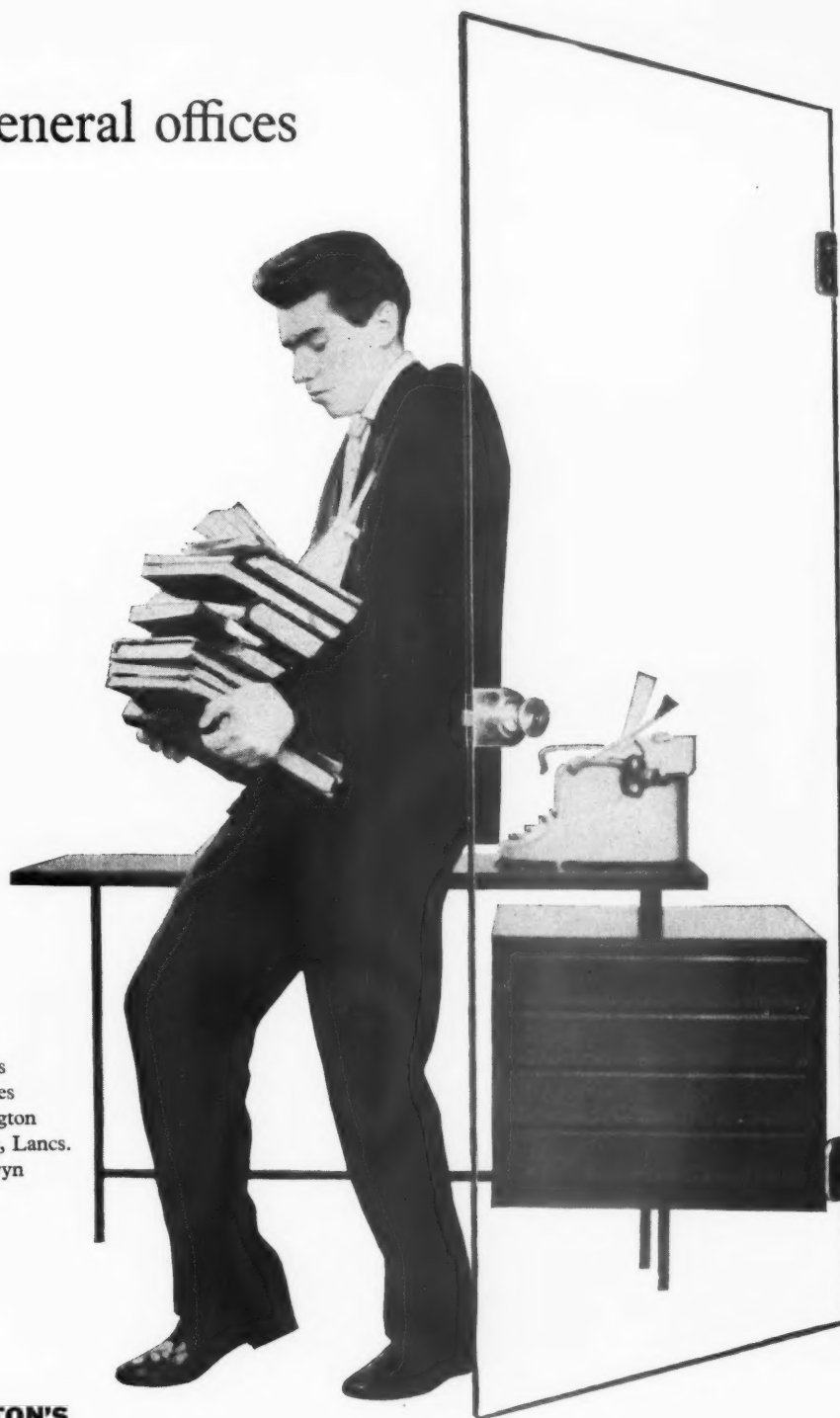
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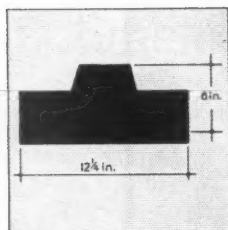


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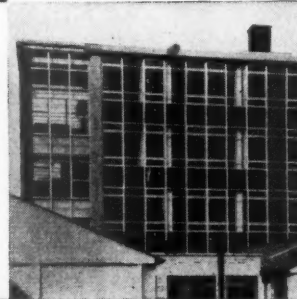
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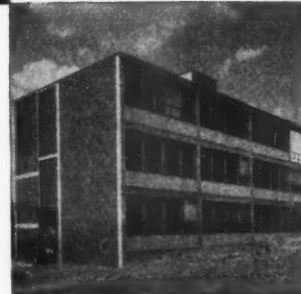


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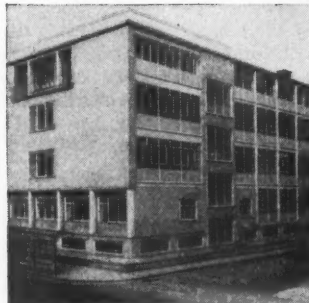
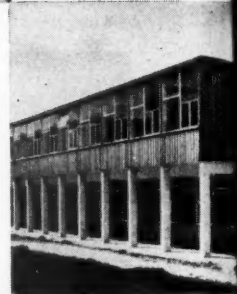


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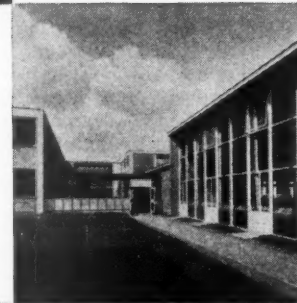
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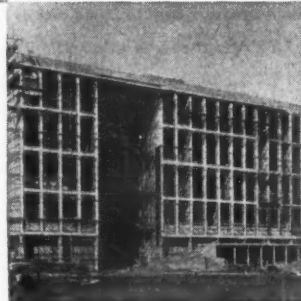


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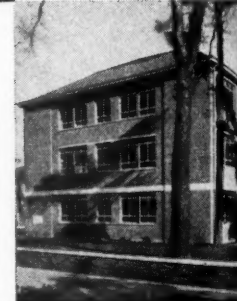


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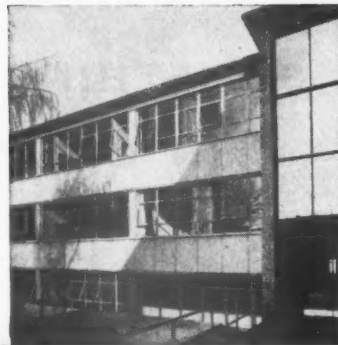
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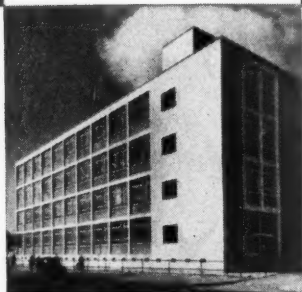


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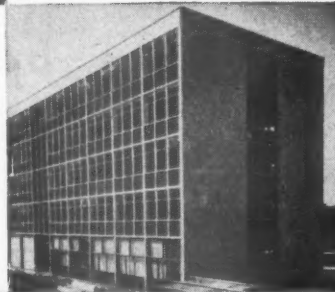
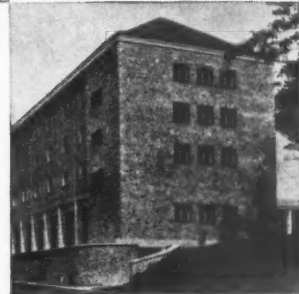


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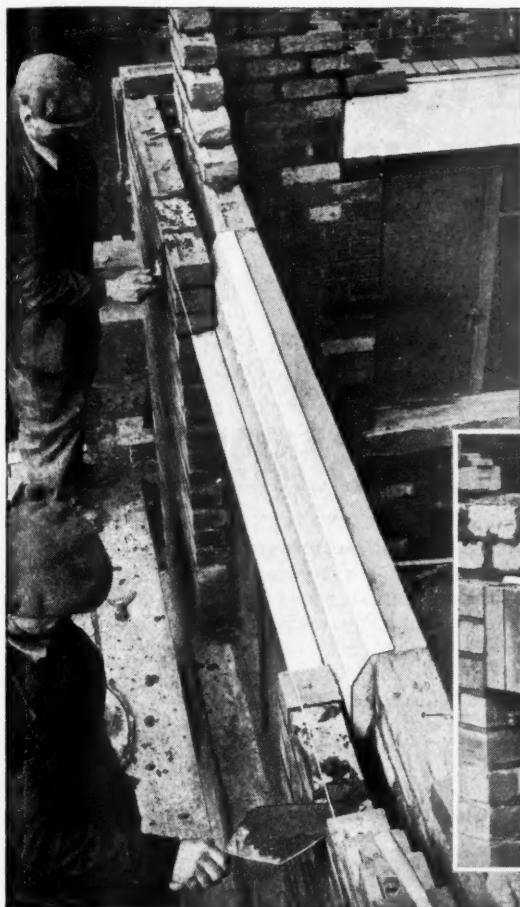
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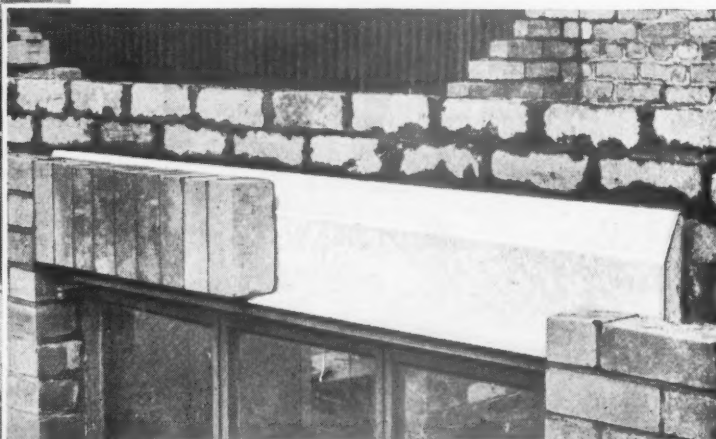
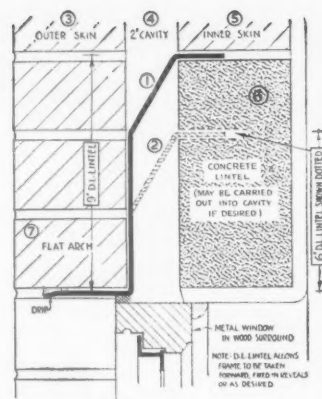


SECTION SHOWING TYPICAL DETAIL

- (1) 9 in. Dorman Long Lintel
- (2) 6 in. Dorman Long Lintel (shown dotted)
- (3) Outer skin
- (4) Cavity
- (5) Inner skin
- (6) Inside concrete lintel (carried out into cavity if so desired)
- (7) Flat arch

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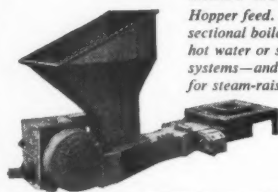
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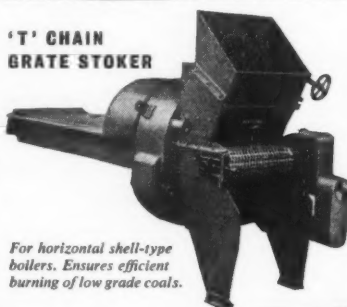
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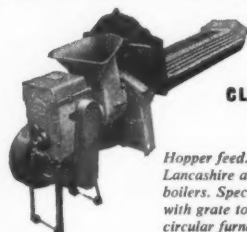
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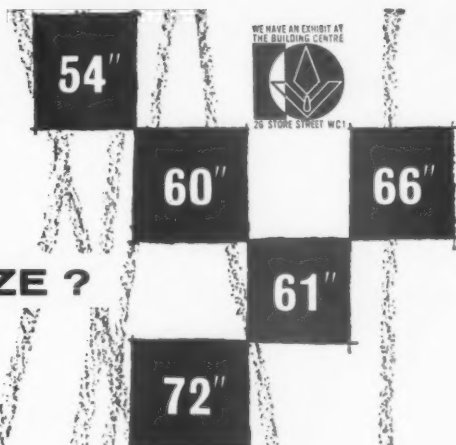
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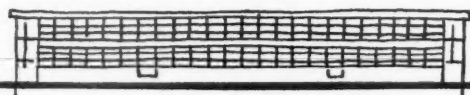
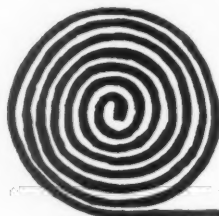
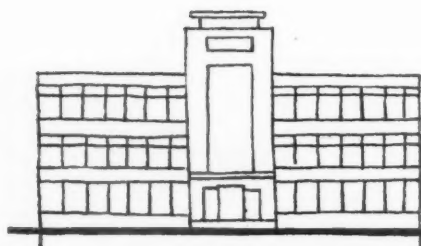
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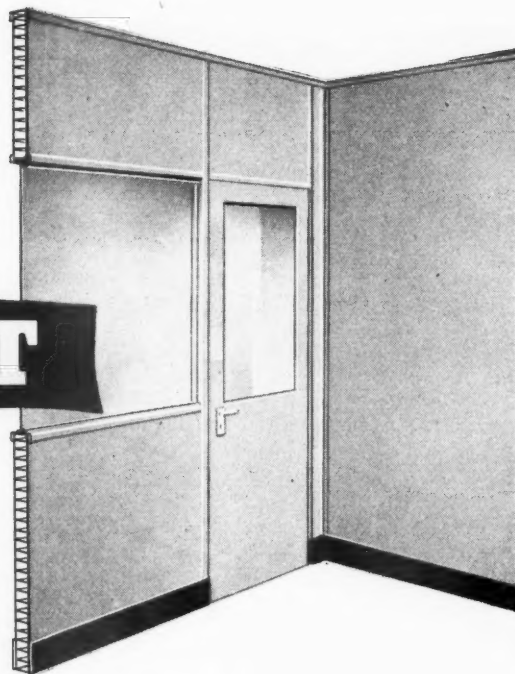
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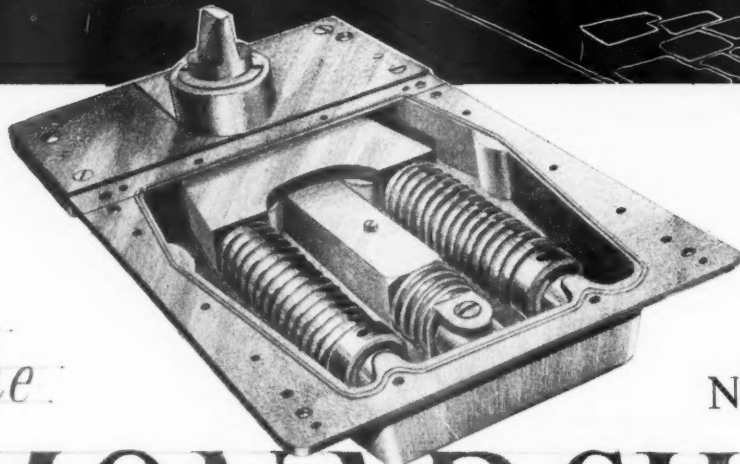
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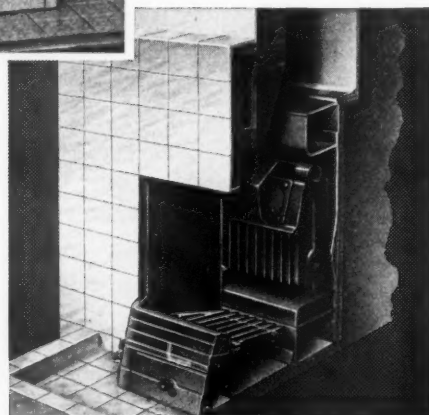
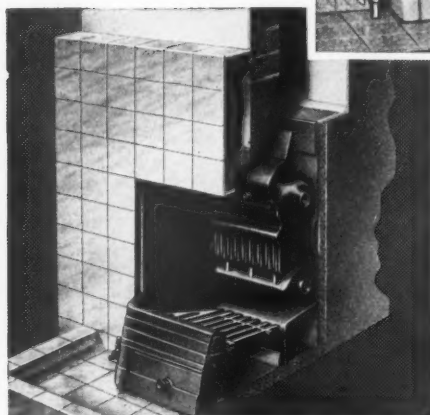
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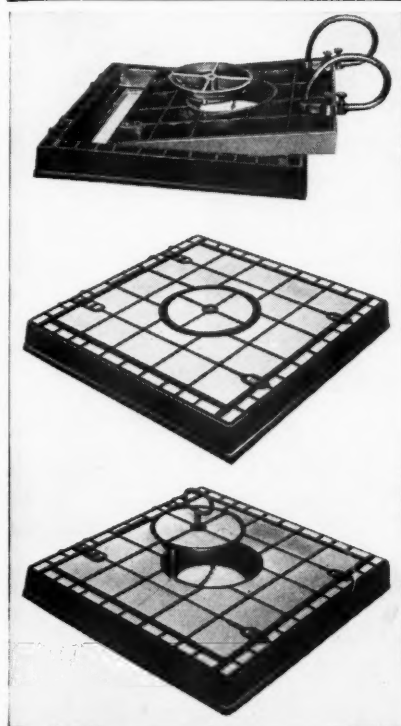
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328A



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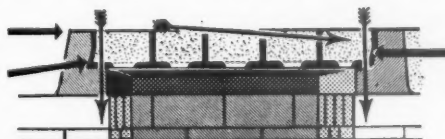
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An increasing number of queries regarding the application of Sprayed 'Limpet' Asbestos as a functional element of Architectural Design is being received from Architects.

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an architect asks questions about Sprayed 'Limpet' Asbestos by NEWALLS

REGD.



"What do you consider is the major advantage of Sprayed 'Limpet' Asbestos?"

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"I understand that Sprayed 'Limpet' Asbestos has two insulating properties?"

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"Being porous, isn't the treatment liable to premature rotting where condensation exists?"

On the contrary. Asbestos is chemically inert. It is rotproof, verminproof and undamaged by water. Condensation is diffused preventing dripping and allowing for speedy re-evaporation to the atmosphere from the warm surface of the coating.

Newalls

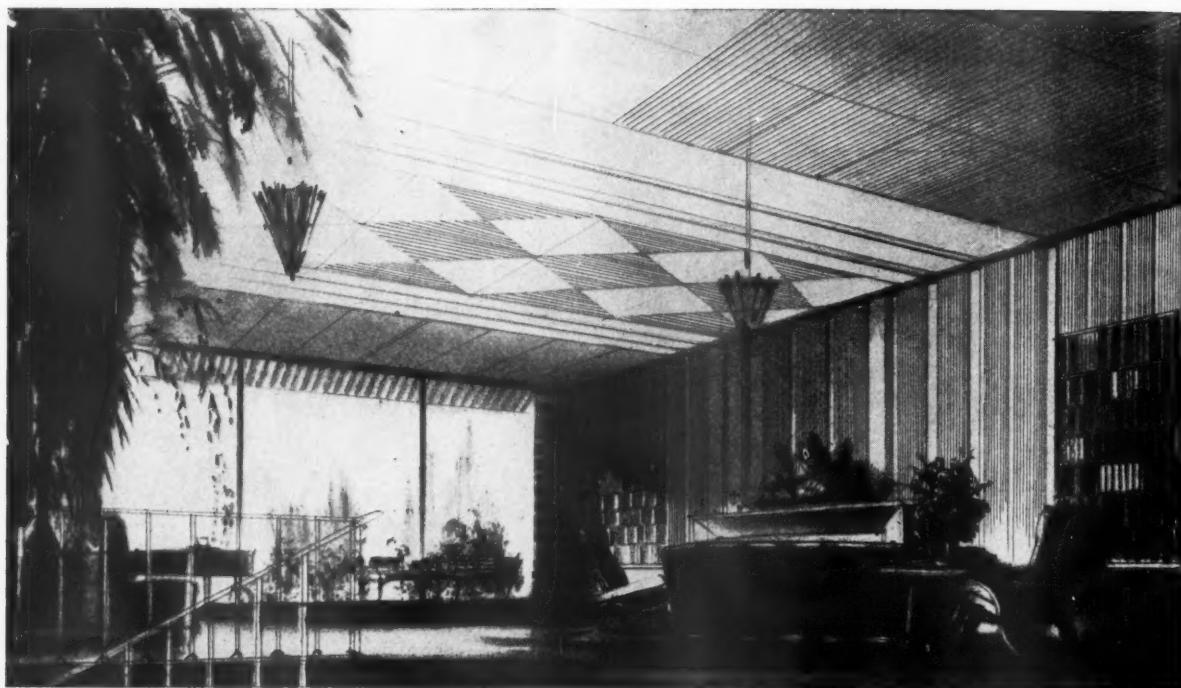
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An aerial view of a section of the Cantley neighbourhood unit of the County Borough of Doncaster where 1,500 houses have been built with Clodin Admixture.

L. J. Tucker, A.R.I.B.A., F.I.Hsg., Borough Architect's and Estates Housing Surveyor.

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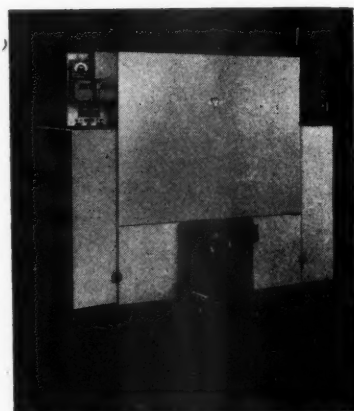
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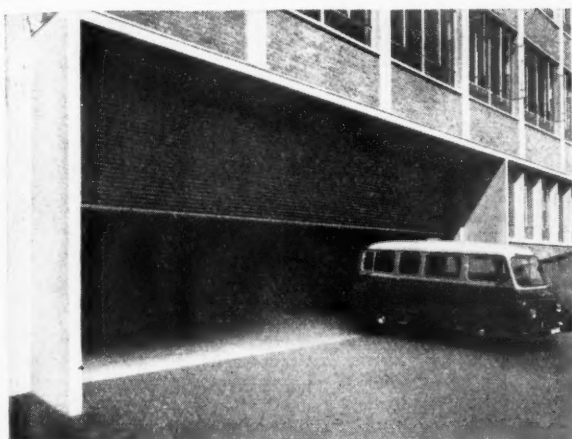
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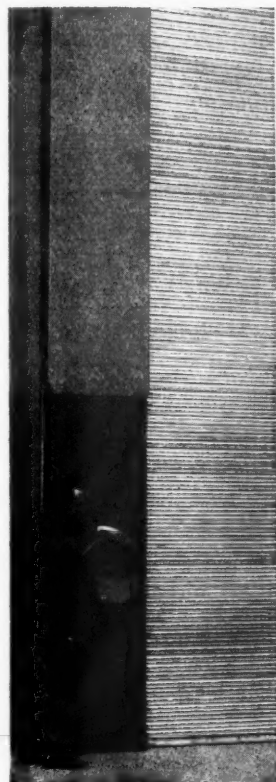
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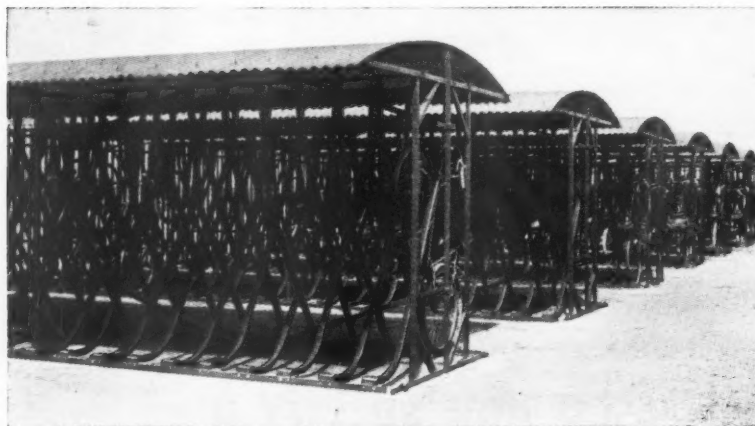


ILLUSTRATION OF TYPE 10

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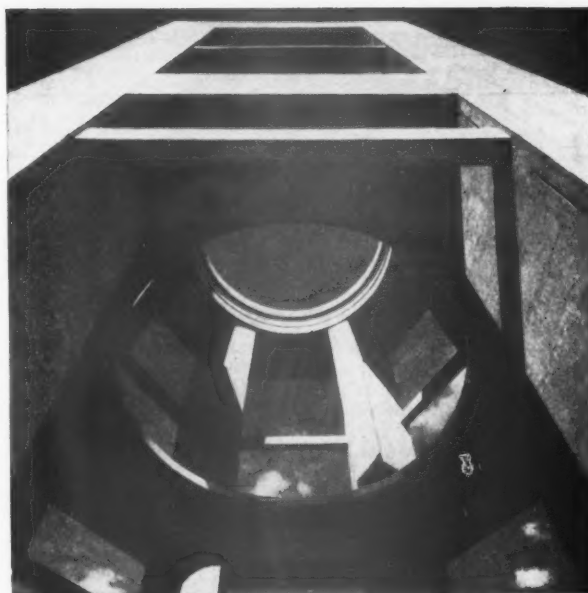
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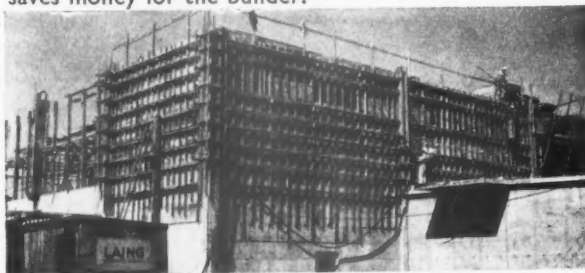
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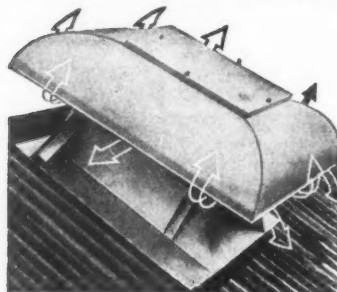
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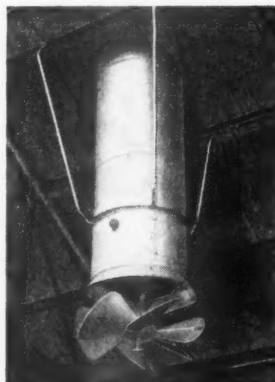
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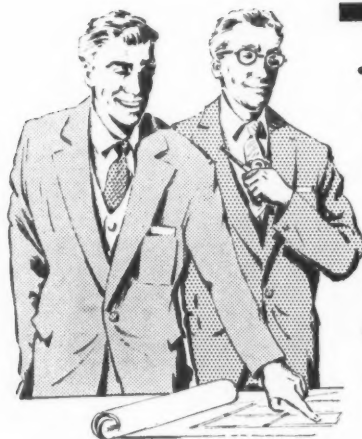
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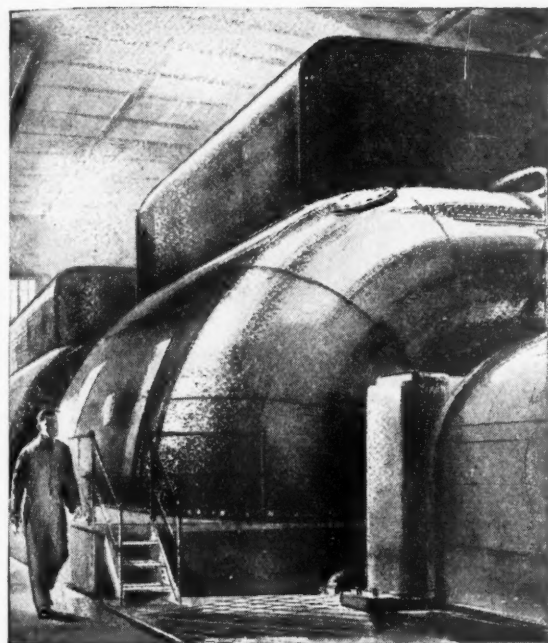


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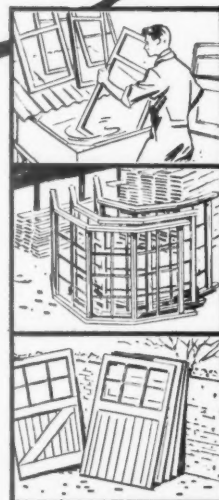
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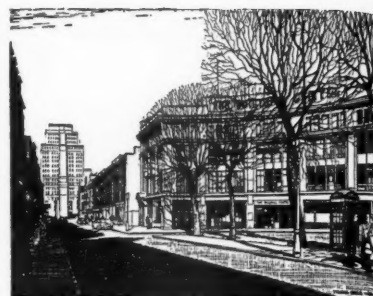
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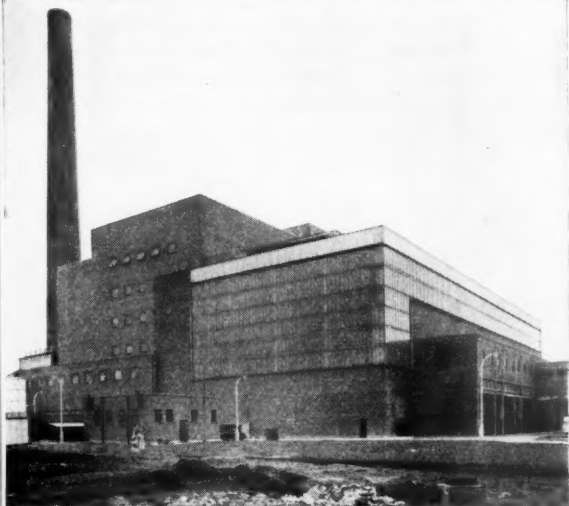
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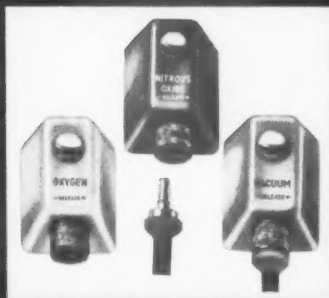
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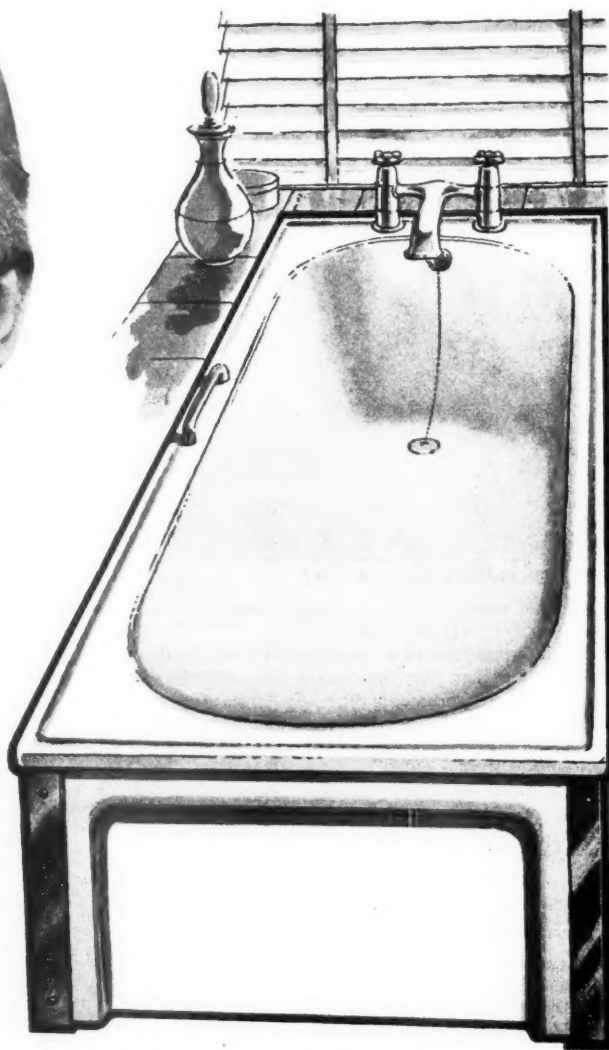


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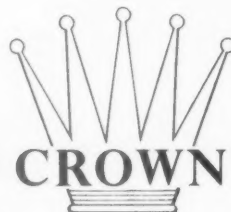
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September 1959

Mortars for Jointing

THE ideal jointing mortar will combine good working properties with early development of strength, while its mature strength will be no greater than is sufficient to meet the purpose for which the masonry is designed. This Digest recommends materials and mixes for various circumstances.

Sulphate attack on mortars was discussed fully in Digest 120 and does not receive further attention here.

A good mortar is highly plastic. It clings to the trowel, spreads easily, and does not readily part with its water or stiffen unduly in contact with an absorptive brick, but remains plastic for long enough to allow for easy adjustment of the brick to line and level. This also helps to ensure the development of a good bond between brick and mortar, and there is then less risk of rain penetration through the finished wall.

Mortar needs to be strong enough to offer good resistance to frost, and it should develop its own strength fairly quickly, particularly during the winter, when the work may be exposed to frost at an early age. It is often wrongly assumed that the strongest mortar must be the best. But loading tests on walls and piers (Digest 75) have shown that the strength of the mortar has less influence on the strength of brickwork than is commonly supposed. Moreover, an unnecessarily strong mortar tends to concentrate the effects of any differential movement in a few comparatively wide cracks; a weaker mortar yields sufficiently to accommodate small movements, and any cracking tends to be distributed as hair cracks in the joints, where they are less noticeable. Units that shrink appreciably on drying, such as lightweight concrete blocks, or sand-lime or concrete blocks, should never be set in an unduly strong mortar.

TYPES OF MORTAR

Lime mortar

Traditionally, mortar is made from lime and sand. For workability, the voids between the sand grains need to be filled with the binder paste. This requires about one volume of lime for every three volumes of sand.

Lime mortars made from high-calcium limes have good working qualities, especially if the lime is prepared by running quicklime to a putty. They develop strength very slowly, however; they do not 'set' but stiffen as they lose water by absorption into the bricks or blocks, and by evaporation, and any further gain in strength is acquired by the very slow process of combination with carbon dioxide from the air. For this reason such mortars are rarely appropriate to present-day methods and tempo of construction.

Hydraulic limes were so named because they set under water—that is, they have constituents (analogous to those in Portland cement) that react with water to form a solid mass. Eminently hydraulic limes develop strength reasonably quickly. They give good service in the hands of those who are familiar with them and know by experience how to slake and handle them. Nothing in this Digest is intended to reflect upon current practice in districts where hydraulic limes are readily

RECOMMENDED MORTAR MIXES

| | Type of construction and position in building | Degree of exposure to wind and rain | Time of construction | Recommended mixes (1) (parts by volume) |
|---|--|-------------------------------------|----------------------|--|
| External Walls Clay bricks Clay blocks Sand-lime bricks (2) Concrete bricks (2) Concrete blocks Rubble masonry | Normal construction not designed to withstand heavy loading | Sheltered and moderate conditions | Spring and summer | 1 : 2 : 8-9 Cement: lime: sand 1 : 8 Cement: sand with mortar plasticizer 1 : 3 Hydraulic lime: sand |
| | | Sheltered and moderate conditions | Autumn and winter | 1 : 1 : 5-6 Cement: lime: sand 1 : 5-6 Cement: sand with mortar plasticizer 1 : 2 Hydraulic lime: sand |
| | | | All seasons | 1 : 1 : 5-6 Cement: lime: sand 1 : 5-6 Cement: sand with mortar plasticizer 1 : 2 Hydraulic lime: sand |
| | Normal construction not designed to withstand heavy loading | All conditions | All seasons | 1 : 1 : 5-6 Cement: lime: sand or 1 : 5-6 Cement: sand with mortar plasticizer 1 : 3 Cement: sand |
| | Parapets, free-standing walls or below damp-proof course (3) | | | |
| | Engineering construction All positions | All conditions | All seasons | 1 : 3 Cement: sand (4) |
| Internal Walls (including (5) partitions) | Normal | — | Spring and summer | 1 : 2 : 8-9 Cement: lime: sand 1 : 8 Cement: sand with mortar plasticizer 1 : 3 : 10-12 Cement: lime: sand 1 : 3 Hydraulic lime: sand |
| | | | Autumn and winter | 1 : 2 : 8-9 Cement: lime: sand 1 : 8 Cement: sand with mortar plasticizer 1 : 1 : 5-6 Cement: lime: sand 1 : 5-6 Cement: sand with mortar plasticizer 1 : 2 Hydraulic lime: sand |
| Tall Chimneys | — | All conditions | All seasons | 1 : 2-3 Hydraulic lime: sand 1 : 2 : 8-9 Cement: lime: sand |

(1) 'Lime' refers to non-hydraulic or semi-hydraulic lime. The proportions given are for lime putty. If the lime is measured as the dry hydrate, the amount can be increased up to 1½ vols. for each vol. of lime putty; the hydrate should preferably be soaked at least overnight before use. Where a range of sand contents is given (e.g., 5-6, 8-9, or 10-12), the higher should be used for sand that is well graded, and the lower for coarse or uniformly fine sand.

(2) When a 1 : 1 : 5-6 mix is used with sand-lime or concrete bricks the bricks should be of Class A(i) quality or better (BS 187 and 1180).

(3) Special attention should be paid to the quality of bricks used for these purposes; sand-lime and concrete bricks should be of the special-purpose type (BS 187 and 1180), and clay products should have a low content of sulphate salts. Magnesian lime mortars should not be used below the damp-proof course unless the lime has been fully hydrated.

available and are normally used with satisfactory results.

Semi-hydraulic limes have less pronounced cementitious qualities than eminently hydraulic limes, and they develop their strength relatively slowly. They can be gauged with Portland cement to secure early strength.

Magnesian limes are not hydraulic, though they are often so described. They may develop a higher strength than high-calcium limes when used in plain lime-sand mixes, and they can be gauged with Portland cement. Magnesian lime mortars are widely used in the Midlands and North of England, with satisfactory results.

Cement mortar

Adequate strength in the fully-hardened mortar, combined with a rapid development of strength in the early stages, is most conveniently attained by the use of Portland cement. But it is not practicable to adjust the strength simply by varying the ratio of cement to sand, because lean mixes of cement and sand are harsh and unworkable. As with lime mortars, about one volume of cement is needed for three volumes of sand to give a workable mix, and a mortar of this kind is too strong for everyday use. Cement-sand mixes in the proportion 1 : 3 are appropriate for heavy engineering work in bricks of comparable strength, and may also be used in foundations and below the level of the damp-proof course to give a dense, impervious mortar, capable of resisting the effects under damp conditions of any soluble salts that may be present. In other circumstances, rich cement mortars are rarely appropriate.

Lime-cement mortar

Mortars made with appropriate proportions of lime and cement take advantage of the useful properties of each.

Using a 1 : 3 cement mortar as a basis, lime-cement mortars are designed on the principle that part of the cement is replaced by an equal volume of lime so that the binder-paste still fills the voids in the sand. In this way,

good working qualities, water retention, bonding properties, and early strength can be secured without the mature strength being too high. Experience has shown that a choice from a range of cement-lime-sand mixes in the proportions of 1 : 1 : 6, 1 : 2 : 9, or 1 : 3 : 12 by volume will meet most requirements, subject to some adjustments as outlined in the Table opposite.

The lime used should be non-hydraulic (high-calcium or magnesian) or semi-hydraulic. It is not advisable to gauge eminently hydraulic lime with cement, unless it is certain that there is no risk of expansion of unslaked particles (Digest 46).

Air-entrained (plasticized) mortar

Mortar plasticizers, which entrain air in the mix, now provide an alternative to lime for imparting good working qualities to lean cement-sand mixes. In effect, the air bubbles serve to increase the volume of the binder paste, filling the voids in the sand, and this correspondingly improves the working qualities.

Workability aids of this kind have proved to be acceptable to building operatives. A comparative study of the properties of various mixes has shown that a 1 : 6 cement-sand mortar, gauged with an effective plasticizer in accordance with the makers' instructions, can be considered to be a reasonable alternative to a 1 : 1 : 6 cement-lime-sand mix; a similar 1 : 8 cement-sand mix offers an alternative to a 1 : 2 : 9 mix. Aerated cement-sand mixes leaner than 1 : 8 are not generally recommended.

Masonry cement mortar

Masonry cements usually consist of a mixture of Portland cement with a very fine mineral filler and an air-entraining agent. The good working properties of mortar mixes made with these cements derive from the plasticizing effects of the fine material and the entrained air. The manufacturers' instructions for their use should be closely followed.

- (4) This recommendation applies only when the maximum possible strength is needed. Otherwise, it is better to adopt the recommendations given for clay bricks generally.
- (5) For concrete partition blocks that have an appreciable drying shrinkage the mix with the lower cement content is preferable. For some types of partition blocks, e.g. gypsum or anhydrite plaster blocks, a mortar based on a gypsum or anhydrite plaster may be used.

RECOMMENDED MIXES

The mortar mixes recommended for particular purposes or circumstances are shown in the Table. The guiding principle is that the mortar used should contain no more cement than is necessary to give adequate strength in the brickwork, unless there is good reason for choosing a richer mix. For example, for building in autumn and winter, the richer mortars are preferred, as they will develop strength quickly to a stage at which they can resist the effects of frost.

Where the bricks or blocks have a high drying shrinkage, any consequent cracking is less obtrusive if a relatively weak mortar is used. The choice may then entail some risk of frost damage, and appropriate precautions should be taken to protect work in progress in cold weather (see Ministry of Works Advisory Leaflet No. 8).

The care taken to select the best mix proportions will be largely nullified if the materials for the mix are 'measured' by the shovelful instead of in gauge boxes, and if no allowance is made for the increase in volume of sand when it is damp. Thus, 7 volumes of damp sand may be equivalent to only 5 volumes of dry sand. A simple method of measuring the 'bulking' of a sand is described in Digest No. 44.

The error introduced by bulking is partly avoided if the cement-lime-sand mortar is prepared from 1:3 lime-sand coarse stuff (wet mix), since each volume of coarse stuff is equivalent to the same volume of dry sand. Thus, in preparing a 1:1:6 cement-lime-sand mix, 1 volume of cement and 3 additional volumes of sand should be mixed with 3 volumes of coarse stuff. Similarly, for a 1:2:9 mix, 1 volume of cement is mixed with 6 volumes of coarse stuff and 3 additional volumes of sand, or for a 1:3:12 mix, 9 volumes of coarse stuff and 3 volumes of sand are taken for each volume of cement.

Alternatively, the coarse stuff can be mixed in the proportions 1:6, 2:9, or 3:12 lime to sand, to be gauged at the rate of 1 volume of cement to 6, 9, or 12 volumes of coarse stuff, respectively.

The gauging of coarse stuff, as required, is preferable to the preparation of a mixture of

cement, dry hydrated lime, and sand, because the lime becomes more plastic if it is soaked in water for a time before it is used. Where the dry constituents are used, the working properties of the mortar can be adjusted and improved by increasing the proportion of lime by up to half as much again.

The development of strength in cement-sand or cement-lime-sand mixes depends on the cementitious properties of the cement, and these will be largely lost if the mixed mortar is allowed to stand too long and is knocked up again after the cement has begun to set. Mixes should be prepared in batches of appropriate size so that each may be used up within a period of about two hours. Any surplus remaining after that time should be discarded.

Gypsum plaster must never be added to mixes containing Portland cement, because such mixtures expand under moist conditions (Digest 43).

Pointing

Pointing is best done on the bedding mortar as the work proceeds. The mix used for pointing as a separate operation should not be appreciably stronger than the bedding mortar. For repointing old brick or stonework the mortar used should contain no more cement than is necessary to give adequate resistance to weathering.

Efflorescence

Brickwork in cement mortar often shows more efflorescence than it would do in a lime mortar. While the cement may contribute a little to the salt content of the wall, the more important reason is probably that a dense joint offers a high resistance to the passage of moisture. In consequence, more of the water present evaporates from the face of the brick and deposits there any salts that may be present. This affords another reason for avoiding unnecessarily dense mortars.

CHOICE OF MATERIALS

Sand

Sand should meet the requirements of the British Standard (BS 1200). Very fine sands should not be used with hydraulic limes or for

engineering brickwork; where they are used for other purposes it is advisable to decrease the proportion of sand, as indicated in the footnote to the Table.

Lime

Non-hydraulic, semi-hydraulic and magnesian quicklimes or hydrated limes should satisfy the requirements of the British Standard for building limes (BS 890). This Standard does not cover eminently hydraulic limes, for which specification clauses are included in the Code of Practice for brickwork, CP 121.101.

Cement

Portland cement (BS 12), rapid-hardening cement (BS 12), Portland blastfurnace cement (BS 146), and sulphate-resistant cement (which should conform to the general requirements of BS 12) may be used in admixture with lime; high-alumina cement may not, but it may be used in admixture with ground chalk.

STONE MASONRY

The principles relating to the choice of mortar apply also to the jointing and pointing

of stone masonry (Digests 20 and 21). Mixes similar to those described above are recommended in the Codes of Practice (CP 121.201 and 121.202), though it is not intended that these should necessarily supersede other mixes that are being used with satisfactory results.

It is inadvisable to use ash mortars for the jointing and pointing of historic or monumental buildings, because the sulphates introduced with the ashes may contribute to cause disintegration of the mortar and may in time have some detrimental effect on the stone.

Occasionally, new limestone buildings develop brownish stains near the joints. These are caused by a reaction between alkali derived from the mortar and traces of organic matter present in the stone. Such stains soon disappear or become masked by superficial deposits, but they may for a time be unsightly. Portland cements and hydraulic limes contain variable amounts of alkali, and some may cause more staining than others. A simple comparison can be made by standing pieces of the stone on pats of mortar in separate shallow dishes, adding water to the dishes, and watching for the development of stains where water absorbed from the mortar evaporates from the surfaces of the the stone.

(Prepared at the Building Research Station, Garston, Herts.)

Digest No. 125: Small underground drains and sewers: II—Corrigenda

Page 4, **Site work**, 5th line: for "10 in." read "12 in."

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